

S. HRG. 114-382

**CHALLENGES AND OPPORTUNITIES FOR SMALL  
BUSINESSES ENGAGED IN ENERGY DEVELOPMENT  
AND ENERGY INTENSIVE MANUFACTURING**

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**HEARING**

BEFORE THE

**COMMITTEE ON SMALL BUSINESS  
AND ENTREPRENEURSHIP  
UNITED STATES SENATE**

**ONE HUNDRED FOURTEENTH CONGRESS**

**FIRST SESSION**

\_\_\_\_\_  
**JULY 14, 2015**  
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ONE HUNDRED FOURTEENTH CONGRESS

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# C O N T E N T S

## OPENING STATEMENTS

	Page
Vitter, Hon. David, Chairman, and a U.S. Senator from Louisiana .....	1
Shaheen, Hon. Jeanne, a U.S. Senator from New Hampshire .....	6

## WITNESSES

Mr. Toby Mack, President & CEO, Energy Equipment and Infrastructure Alliance, Washington, DC .....	9
Dr. Neil Aspinwall, Chancellor, SOWELA Technical Community College, Lake Charles, LA .....	16
Ms. Kateri Callahan, President, Alliance to Save Energy, Washington, DC .....	22
Mr. Tyson Slocum, Director, Public Citizen Energy Program, Washington, DC .....	29

## ALPHABETICAL LISTING AND APPENDIX MATERIAL SUBMITTED

American Sustainable Business Council	
Letter dated July 13, 2015 .....	84
Aspinwall, Neil	
Testimony .....	16
Prepared statement .....	19
Responses to questions Submitted by Senator Enzi .....	87
Callahan, Kateri	
Testimony .....	22
Prepared statement .....	24
Mack, Toby	
Testimony .....	9
Prepared statement .....	11
Responses to questions Submitted by Senator Enzi .....	88
Shaheen, Hon. Jeanne	
Opening statement .....	6
FY14 Scorecard Summary by Prime Spend Subk and Plan Progress Scores 2015 .....	50
Slocum, Tyson	
Testimony .....	29
Prepared statement .....	31
Vitter, Hon. David	
Opening statement .....	1
Letter Dated May 8, 2015, from the Small Business Administration Office of Advocacy .....	3
Hearings on “Non-Jurisdictional” Issues under Democratic Leadership .....	8
Report titled “Macroeconomic Impacts of LNG Exports from the United States” .....	55
Report titled “Updated Macroeconomic Impacts of LNG Exports from the United States” .....	60
Report titled “The 2015 Economic Report of the President” .....	61
Article titled “Democrats Increasingly Backing Oil and Gas Industry” .....	70
Report titled “What They’re Saying: Labor Groups Support LNG Exports” .....	75



**CHALLENGES AND OPPORTUNITIES  
FOR SMALL BUSINESSES ENGAGED  
IN ENERGY DEVELOPMENT AND ENERGY  
INTENSIVE MANUFACTURING**

**TUESDAY, JULY 14, 2015**

UNITED STATES SENATE,  
COMMITTEE ON SMALL BUSINESS  
AND ENTREPRENEURSHIP,  
*Washington, DC.*

The Committee met, pursuant to notice, at 2:35 p.m., in Room 428A, Russell Senate Office Building, Hon. David Vitter, Chairman of the Committee, presiding.

Present: Senators Vitter, Fischer, Gardner, Ernst, Enzi, Shaheen, Markey, and Coons.

**OPENING STATEMENT OF HON. DAVID VITTER, CHAIRMAN,  
AND A U.S. SENATOR FROM LOUISIANA**

Chairman VITTER. Good afternoon, everybody. I will call the committee to order.

We are here for an important hearing entitled, “Challenges and Opportunities for Small Businesses Engaged in Energy Development and Energy Intensive Manufacturing.” This hearing is particularly important and timely because of the significance of the energy industry to our economy and how many small businesses are involved.

Before the drop in the price of oil relatively recently, energy jobs in America were the difference between our being in recovery and actually remaining in a recession. Were it not for those energy-related jobs, we would still be in a technical recession. Thankfully, that is not the case because of these significant jobs.

And, as I said, it is also important and why we are talking about it in this Small Business Committee that many energy-related businesses are small entities. To quantify that, I will use my home state of Louisiana as an example. A majority of Louisiana businesses in four of the five energy-defined sectors had less than 20 workers. Specifically, businesses with fewer than 20 employees made up about 77 percent of the oil and gas extraction businesses, 71 percent of oil and gas operations businesses, over 68 percent of oil and gas wells businesses, and about 57 percent of oil and gas field machinery and equipment-related businesses. These illustrate just how important the industry and the sector is to small business.

The purpose of this hearing is to delve a little deeper into opportunities and challenges that these small businesses face in the energy sector. One of our witnesses, Toby Mack, is President of the Energy Equipment and Infrastructure Alliance, which represents the shale supply chain, and he will speak to that phenomenon, including LNG exports.

The opportunities from this new era of American energy abundance are tremendous, but there are also challenges. One long-term challenge is that the demand for skilled workers is outpacing their availability, and so the question becomes how do we help train our workers to step into these high-skill, high-demand jobs in the energy sector.

Part of the answer lies with our community and technical colleges that are stepping up to provide tailored programs and services for that training. Our second witness, Dr. Neil Aspinwall, Chancellor of Southwest Louisiana Technical Community College, will discuss some of these challenges and opportunities in depth.

And, of course, there are other challenges, as well. I have been very outspoken about the Obama Administration's energy and environmental regulations, which are overly burdensome, in my opinion, and really hold down a lot of great potential industry sector job creation. This committee recently held a hearing to examine how the EPA violated the Regulatory Flexibility Act by certifying that its rule to redefine Waters of the United States will not have a significant economic impact on a substantial number of small entities. And in particular, if you will remember, we heard testimony from the Small Business Administration's Office of Advocacy and it was very clear on that point.

Now, while EPA did not make as blatant of a mistake when it came to its proposed federal implementation plan for regulating carbon emissions, I think it clearly fell short there, as well. EPA's efforts were so inadequate, in fact, that they earned a rare letter of rebuke from the SBA's Office of Advocacy, which I will insert into the record. If there is no objection, and hearing none, we will insert that into the record.

[The letter follows:]



*Advocacy: the voice of small business in government*

May 8, 2015

BY ELECTRONIC MAIL

The Honorable Gina McCarthy  
Administrator  
U.S. Environmental Protection Agency

**RE: SBAR Panel – Convening of Panel on “Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units Constructed on or Before January 8, 2014.”**

Dear Administrator McCarthy:

On April 30, 2015, EPA convened a Small Business Advocacy Review (SBAR) panel on its upcoming rulemaking, “Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units Constructed on or Before January 8, 2014.” The Office of Advocacy (Advocacy) believes that EPA has not prepared sufficient materials to convene this panel. EPA has not provided the other panel members with information on the potential impacts of this rule and has not provided Small Entity Representatives (SERs) with the necessary information upon which to discuss alternatives and provide recommendations to EPA, as required by the Regulatory Flexibility Act (RFA) as amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA). Due to this lack of information, any panel conducted under these circumstances is unlikely to succeed at identifying reasonable regulatory alternatives for small businesses.

**The Office of Advocacy**

Congress established the Office of Advocacy under Pub. L. No. 94-305 to advocate the views of small entities before Federal agencies and Congress. Because Advocacy is an independent body within the U.S. Small Business Administration (SBA), the views expressed by Advocacy do not necessarily reflect the position of the Administration or the SBA.<sup>1</sup> The RFA,<sup>2</sup> as amended by SBREFA,<sup>3</sup> gives small entities a voice in the federal rulemaking process. For all rules that are expected to have a “significant economic impact on a substantial number of small entities,”<sup>4</sup> EPA is required by the RFA to conduct a SBREFA Panel to assess the impact of the proposed rule on small entities,<sup>5</sup> and to consider less burdensome alternatives. Moreover, federal agencies

<sup>1</sup> 15 U.S.C. § 634a, *et. seq.*

<sup>2</sup> 5 U.S.C. § 601, *et. seq.*

<sup>3</sup> Pub. L. 104-121, Title II, 110 Stat. 857 (1996)(codified in various sections of 5 U.S.C. § 601, *et. seq.*).

<sup>4</sup> See 5 U.S.C. § 609(a), (b).

<sup>5</sup> Under the RFA, small entities are defined as (1) a “small business” under section 3 of the Small Business Act and under size standards issued by the SBA in 13 C.F.R. § 121.201, or (2) a “small organization” that is a not-for-profit enterprise which is independently owned and operated and is not dominant in its field, or (3) a “small governmental

must give every appropriate consideration to any comments on a proposed or final rule submitted by Advocacy and must include, in any explanation or discussion accompanying publication in the Federal Register of a final rule, the agency's response to any written comments submitted by Advocacy on the proposed rule.<sup>6</sup>

### Background

Since the passage of SBREFA in 1996, EPA has been a "covered agency" under section 609 of the RFA. In that time, EPA, OMB, and SBA have jointly conducted almost 50 panels. EPA has also published valuable guidance to its program offices on compliance with the RFA, including the conduct of SBREFA panels.<sup>7</sup>

SBREFA panels give Small Entity Representatives an opportunity to understand a covered agency's upcoming proposed rule and provide meaningful recommendations to aid in the agency's compliance with the RFA. The process starts with the covered agency notifying Advocacy with "information on the potential impacts of the proposed rule on small entities and the type of small entities that might be affected[.]"<sup>8</sup> Upon convening of the panel, the RFA states that "the panel shall review any material the agency has prepared in connection with this chapter, including any draft proposed rule, collect advice and recommendations of each individual small entity representative identified by the agency after consultation with the Chief Counsel, on issues related to subsections 603(b), paragraphs (3), (4) and (5) and 603(c)[.]"<sup>9</sup> Advocacy believes that these requirements, read together and in the context of activity to be conducted prior to proposed rulemaking, require the agency to provide sufficient information to the SERs so that they can understand the likely form of the upcoming rulemaking, evaluate its

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jurisdiction" that is the government of a city, county, town, township, village, school district or special district with a population of less than 50,000 persons. 5 U.S.C. § 601.

<sup>6</sup> 5 U.S.C. § 604, as amended by the Small Business Jobs Act of 2010, Pub. Law No. 111-240, Sec. 1601.

<sup>7</sup> *Final Guidance for EPA Rulewriters: Regulatory Flexibility Act as amended by the Small Business Regulatory Enforcement Fairness Act*, OPEI Regulatory Development Series, U.S. EPA, November 2006.

<sup>8</sup> § 609(b)(1).

<sup>9</sup> § 609(b)(4). Section 603(b), paragraphs (3), (4), and (5) read:

"(3) a description of and, where feasible, an estimate of the number of small entities to which the proposed rule will apply;

"(4) a description of the projected reporting, recordkeeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for preparation of the report or record;

"(5) an identification, to the extent practicable, of all relevant Federal rules which may duplicate, overlap or conflict with the proposed rule."

Section 603(c) reads:

"(c) Each initial regulatory flexibility analysis shall also contain a description of any significant alternatives to the proposed rule which accomplish the stated objectives of applicable statutes and which minimize any significant economic impact of the proposed rule on small entities. Consistent with the stated objectives of applicable statutes, the analysis shall discuss significant alternatives such as –

"(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities;

"(2) the clarification, consolidation, or simplification of compliance and reporting requirements under the rule for such small entities;

"(3) the use of performance rather than design standards; and

"(4) an exemption from coverage of the rule, or any part thereof, for such small entities."



potential economic impacts, and recommend alternative regulatory options that would minimize any significant economic impact while preserving the agency's regulatory objectives. Advocacy also believes that the statute clearly intends that the agency provide deliberative information as part of this process.

#### **SBREFA Panel**

On January 7, 2015, Assistant Administrator Janet McCabe announced EPA's intent to propose a Federal Implementation Plan to implement the Clean Power Plan and provide interested states with a model for compliance. At that time, Assistant Administrator McCabe also announced the intent to convene a panel on this rulemaking. Advocacy received formal notification of EPA's intent to convene this panel on March 26, and EPA convened the panel on April 30.

Materials provided to the SERs on May 1 do not describe potential regulatory alternatives under development or economic impacts. The description of the proposed rule is a discussion of broad outlines of policies and factors EPA may be considering, in the context of complying with final Emission Guidelines, which EPA has not released and to which the SERs have no access. Thus, the outreach materials present little information with which the SERs could evaluate the potential impact on their individual generating units or facilities. This greatly limits their ability to propose potential regulatory flexibilities or discuss the costs and benefits of particular regulatory alternatives on their small businesses.

For this reason, Advocacy believes that EPA should not be convening this panel without a clearer set of available regulatory alternatives and potential impacts available for discussion by the panel members and the SERs.

I look forward to working with you to make sure the voice of small business is heard and considered. When done well, the SBREFA panel process is an important channel for that voice, and it works to the benefit of all stakeholders. If you have any questions, feel free to contact me or Assistant Chief Counsel David Rostker at david.rostker@sba.gov.

Sincerely,

/s/

Claudia R. Rodgers  
Acting Chief Counsel for Advocacy

cc: Small Entity Representatives participating in the SBREFA Panel on "Federal Plan Requirements for Greenhouse Gas Emissions from Electric Utility Generating Units Constructed on or Before January 8, 2014."

Howard Shelanski, Administrator  
Office of Information and Regulatory Affairs  
Office of Management and Budget

Chairman VITTER. There are many other examples of the EPA's refusal to responsibly consider small business impacts, and we have talked about those on other occasions, as well.

For all of these reasons, and because of all aspects of this hearing, I am working with others on a small business energy bill and will be finalizing that in the coming days. But, certainly, today's discussion will help shape that legislative solution to reduce federal burdens for small businesses specifically involved in the energy sector. I believe that is important to fully maximize the job creation potential of this important sector of our economy.

And now, I want to welcome and turn to Senator Shaheen, the committee's Ranking Member.

**OPENING STATEMENT OF HON. JEANNE SHAHEEN, RANKING MEMBER, A U.S. SENATOR FROM NEW HAMPSHIRE**

Senator SHAHEEN. Thank you very much, Chairman Vitter.

Welcome, everyone. Welcome to our witnesses. I look forward to this opportunity to discuss the energy challenges that face small businesses. I do have some concern that we may get into some energy issues that are under the jurisdiction of the Senate Energy and Natural Resources Committee, but nonetheless, small businesses are facing critical cost issues because of energy challenges, and so we should have a good discussion.

Having owned and operated a small business, like I am sure all of us know, every cost counts and every cost has to be managed as smartly as possible, and this is certainly true for energy consumption. We are seeing in New Hampshire, where I am from, that rising costs of energy are having a real impact on the business environment.

Now, as I think about energy, I think about energy efficiency, because it is the cheapest, fastest way to address our nation's energy needs. I have joined with Senator Rob Portman to advance major legislation to ramp up energy efficiency in manufacturing, in buildings, and in the federal government. I think this is a particularly important way to address energy because it is something that we can all agree on, regardless of what part of the country we are from or what particular area of energy we support, whether it is fossil fuels or solar and wind. Everybody benefits from energy efficiency.

We had the opportunity to bring Shaheen-Portman to the floor last year, but despite overwhelming support, it was not able to advance because of disputes over an unrelated partisan amendment. However, the President did sign into law a mini-version of the bill earlier this year, which we think helps provide significant efficiency savings.

Every small business, whether in manufacturing, in retail services, or even agriculture, can benefit from energy efficiency. But, of course, there is a problem, and that is that small businesses, especially in energy-intensive sectors, face unique challenges and barriers when it comes to addressing their energy needs and increasing their energy efficiency. I think the Small Business Administration can play an important role, particularly when it comes to the financing that they often need to be more energy efficient.

Today, I have introduced legislation that will ensure that small businesses who want to undertake energy efficiency projects can

qualify for the 504 loan program. As members of this committee, we know that the 504 program helps small businesses purchase their own real estate or equipment. That makes it easier for them to invest in expanding their companies. By helping small businesses take full advantage of energy efficiency, we reap a wide range of benefits, everything from reducing costs, to enhancing competitiveness, to reducing greenhouse gas emissions.

So, again, I want to welcome our witnesses, and I want to take this opportunity to give a special welcome to Kateri Callahan, who is President of the Alliance to Save Energy and who I have had the great opportunity to work with now for almost six years ago. For more than a decade as President of the Alliance, Kateri has provided extraordinary national leadership in the field of energy efficiency and I look forward to her testimony today and to her continued efforts to help businesses become more efficient.

Thank you, Mr. Chairman.

Chairman VITTER. Great. Thank you, to our Ranking Member.

Regarding the jurisdiction issue, let me just note that this committee has always, on a bipartisan basis, had hearings on a number of topics that were not within our narrow technical jurisdiction, including certainly energy discussions and hearings. And, just for instance, under Senators Landrieu and Kerry, two previous Chairs, there were five energy discussions like that, and I will just submit that list for the record.

[The information follows:]

**Hearings on “non-jurisdictional” issues under Democratic Leadership**

- When Democrats ran the Senate, the Committee held at least 5 hearings that addressed small business concerns throughout the energy sector, including domestic energy production.
  - Most notably, one of my predecessors as Chair, former Senator Mary Landrieu, held a field hearing on domestic energy production as it relates to small businesses:
    - “Fueling America—Enabling and Empowering Small Businesses to Unleash Domestic Production.” (1/21/14)
  - Another former Chairman, former Senator John Kerry held 4 energy related hearings during the 110<sup>th</sup> Congress:
    - “Examining Solutions to Cope with the Rise in Home Heating Oil Prices” (6/25/08)
    - “The Rising Costs of Energy: Challenges and Opportunities for Small Businesses” (5/28/08)
    - “The Impact of Rising Gas Prices on America’s Small Business” (6/14/07)
    - “Small Business Solutions for Combating Climate Change” (3/08/07)
- According to your current argument, none of the aforementioned hearings held by Democratic Chairmen were under the Committee’s jurisdiction.
- Well, I disagree with that argument and believe that it is this Committee’s responsibility to continue its long-standing, bipartisan tradition of examining all policy matters of importance to America’s small businesses.

But, I know we will have a productive discussion.

Let me introduce our four witnesses and then they will testify, in turn.

Toby Mack is President and CEO of the Energy Equipment and Infrastructure Alliance based in Washington, D.C.

Dr. Neil Aspinwall is Chancellor of Southwest Louisiana Technical Community College in Lake Charles, Louisiana.

Kateri Callahan is President of the Alliance to Save Energy in Washington, D.C.

And Tyson Slocum is Director of the Energy Program at Public Citizen.

Welcome to all of you, and we will be eager to hear from all of you in turn, starting with Mr. Mack.

**STATEMENT OF TOBY MACK, PRESIDENT AND CHIEF EXECUTIVE OFFICER, ENERGY EQUIPMENT AND INFRASTRUCTURE ALLIANCE**

Mr. MACK. Thank you, Chairman Vitter and Ranking Member Shaheen, for the opportunity to comment on the impact of energy development on small business.

EEIA is an organization of companies, trade associations, and labor unions that represent the businesses and workers of the shale oil and gas supply chain. Policies that support increased production will result in a great number of new, high-paying jobs and strong growth in the supply chain, especially for its small businesses.

Equipment, products, and services provided in support of shale energy operations come from all 50 states. They are found in 60 different industries in six major sectors. These are depicted on the diagram included in my written statement, which appears as this. They are, briefly, equipment and machinery, construction, logistics, materials and supplies, information technology, and professional services.

To illustrate the supply chain, I offer the example of a piece of construction equipment used to prepare a production site or build energy facilities such as pipelines, storage, or an LNG processing plant. Consider what goes into making that machine. There is raw steel, fabricated steel plate, and forgings; the machine tools that cut, bend, machine, and weld components; buckets, teeth, and attachments; a high-horsepower engine and transmission; hydraulic cylinders and components; steel sprockets and tracks or huge rubber ties; electronic controls and components; plus hoses, valves, filters, gaskets, lubricants, and fuel.

To obtain these components, the machine's manufacturer has thousands of its own suppliers, and their suppliers have suppliers, and so on down the line until you get to raw material. The vast majority of these businesses are smaller local and regional firms. They are all essential to building the machine, and they are ultimately dependent on energy production to create the demand for it and the jobs that go with it.

Now, let us turn to the supply chain's economic and employment dimensions. EEIA estimates that there are at least 120,000 energy supply chain businesses, more than 100,000 of which are small. According to IHS, in 2015, the shale supply chain workforce consists

of 615,000 jobs, growing to 757,000 by 2025. Output in 2015 is \$173 billion, growing to \$206 billion by 2025.

Energy supply chain workers earn, on average, \$79,000 per year, vs. \$68,000 for all American workers. For every direct job in energy production, three jobs are created in the supply chain, and, in fact, six more are created in the communities where workers live and shop.

Consider the new supply chain jobs created when additional natural gas is produced for export. IHS reports that supply chain industries will have 515,000 jobs supporting shale gas production in 2015, growing to 655,000 jobs by 2020. EEIA estimates that shale gas production at 44 billion cubic feet per day in 2015, to reach almost 60 billion cubic feet per day by 2020. This calculates to about 11,000 supply chain jobs for each new BCF per day.

Recent approvals of applications to export LNG anticipate that between now and 2020, capacity will reach about 10 BCF per day, requiring that much additional natural gas production from shale. Thus, we can look forward to over 100,000 new supply chain jobs to be generated by LNG exports alone over the next five years. That means \$8 billion of additional annual income to American workers which will be spent locally as these workers consume, pay taxes in, and contribute to their local communities.

Using the SBA estimate that half of American workers are employed by small business, we project that over the forecast job gains, small businesses will be responsible for creating at least half of them.

Much of this job growth will be concentrated in skill areas that require technical training, but not four-year or higher degrees. Supply chain companies will be challenged to fill positions in high-growth occupations, the need for which will as much as double between 2012 and 2025. High-growth occupations include truck drivers, construction laborers, equipment mechanics, engine technicians, equipment operators, machinists, welders, and many more.

The energy supply chain is truly national and not confined to oil and natural gas producing areas. We see this effect by looking at the geographic distribution of job gains that occur when crude oil production grows. Of the top 15 states by job gains if crude oil production were increased for export, 10 are states in which little or no crude oil is produced. In fact, Illinois, because of the prominence of equipment manufacturing, ranks third behind Texas and California in supply chain jobs gained.

In summary, exports of LNG, and, indeed, of all energy products, including crude oil, will support additional domestic energy production from our large and growing reserves for our innovative and increasingly productive energy sector, supported by the supply chain's small businesses. American shale energy production renaissance has been the principal contributor to our emergence from the deep recent recession. It has the potential to spur substantially more job creation throughout the country, and particularly with small business, if Congress adopts policies that facilitate exports. Thank you.

[The prepared statement of Mr. Mack follows:]

Statement of Toby Mack, EEIA President, Before the  
U.S Senate Committee on Small Business and Entrepreneurship  
July 14, 2015



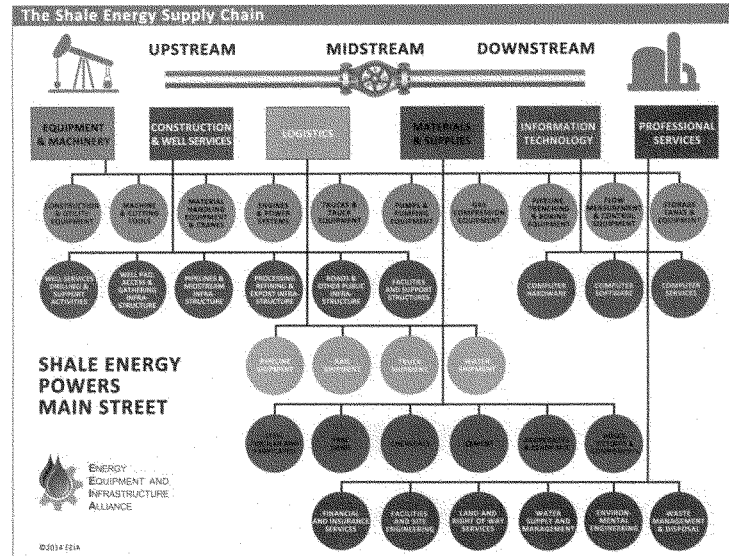
### Challenges and Opportunities for Small Businesses Engaged in Energy Development and Energy Intensive Manufacturing

The Energy Equipment and Infrastructure Alliance (EEIA) is an organization of companies, trade associations and unions that represent the businesses and workers of the shale oil and gas supply chain. Our organization strongly supports free trade in energy, including liquefied natural gas, crude oil and refined petroleum products. Policies that support increased exports of energy will result in a great number of new well-paying jobs and strong growth of business output in the American energy supply chain, and especially for its many small businesses.

Before we address the benefits to small businesses in the supply chain of increased natural gas and LNG production, I'd like first to define the supply chain. Much of the recent dramatic growth in US oil and gas production has come from horizontal drilling and hydraulic fracturing in America's shale formations. This is important for today's hearing because the supply chain that supports natural gas and crude oil production from shale is remarkably large, diverse and widely distributed throughout the United States.

Equipment, products and services provided by the supply chain in support of shale energy operations are produced by businesses and workers in all 50 states. They are found in 60 different industries, which fall within six sectors, each with its own tremendous variety of businesses and occupations. Here is a summary of the products and services supplied by these sectors, which are also depicted graphically on the supply chain diagram that follows:

1. **Equipment and machinery manufacturing, distribution, rental and maintenance;** including earthmoving, material handling, drilling, pumping, power generation and distribution, machine tools and welding equipment. Also trucks, tanks, engines, compressors, and well-head equipment.
2. **Construction of production, storage and transportation facilities;** including well-site and access infrastructure, gathering systems, storage and processing facilities, transmission pipelines; also services directly supporting drilling and production activities
3. **Logistics;** including hauling of equipment, materials and supplies to and from production sites; and truck, pipeline and rail transportation of both energy products and drilling waste away from the sites
4. **Materials, supplies and components;** including steel and other metals, drilling solution, cement, concrete, industrial gasses, fracturing fluids, sand, pipe, valves, fittings, and flow control and electrical components
5. **Information technology;** including computers, software and services for exploration, process measurement and control, and data management and analysis
6. **Professional, financial and other services;** including architectural, environmental and facilities engineering; water and waste management services; financial, real estate and insurance services



To understand the breadth, depth and diversity of the supply chain, consider that almost every product or service has its own supply chain, consisting of businesses and workers that may be one or two steps removed from the production site, but whose jobs and output are ultimately driven by shale gas and oil production.

To illustrate, take the example of a piece of earthmoving machinery used to grade a drilling pad, carve out access roads, or dig foundations and trenches for oil and gas gathering, storage and transmission systems.

Now consider what goes into manufacturing that machine and putting it to work on the energy production site. There's raw steel, fabricated steel plate and forgings; the machine tools that cut, bend, machine and weld steel components; steel buckets, teeth and attachments; a high-horsepower engine and transmission and their components; hydraulic cylinders and components; steel sprockets and tracks or huge rubber tires; electrical and electronic controls and components; plus all the necessary hoses, valves, filters, gaskets, lubricants, and fuel. Then there's the preparation, maintenance and delivery of the machine to the production site by the dealer or rental company. And last but not far from least, there's a skilled operator needed to run the machine safely and efficiently and deliver the work it's designed to produce.

The machine's manufacturer has thousands of its own suppliers of components, materials and services that go into building it and putting it to work. And their suppliers have suppliers and so on down the supply chain line, until you get to raw material. The vast majority of these businesses are smaller local and regional firms. They and their workers are all essential to building the machine, and they are all ultimately dependent on energy production to create the demand for manufacturing that machine and the jobs that go with it. A similar story can be told for every product or service used in energy production.



Now let's turn to the shale supply chain's economic and employment dimensions. Based on energy industry studies, EIA estimates that there are at least 120,000 energy supply chain businesses, more than 100,000 of which are small businesses. Late last year, the research firm IHS published a study<sup>1</sup> of the extent of supply chain jobs and output generated by U.S. unconventional oil and gas operations. It reported that in 2015, the supply chain workforce consists of 615,000 jobs, growing to 757,000 by 2025, for 23% growth. Output in 2015 is \$173 billion, growing to \$206 billion by 2025 (in constant dollars), for 20% growth. These are base case numbers that assume that our current restrictive energy export policies remain in effect. The study also documents that energy supply chain workers earn, on average, \$79,000 per year, versus \$68,000 for all American workers. IHS also estimates that for every direct job involved in energy production, three more jobs are created in the supply chain and 6 more in communities where workers live, shop and eat.

Consider the potential for new supply chain jobs throughout the US, when additional natural gas is produced to supply LNG export markets. In the IHS Economics study, America's New Energy Future<sup>2</sup>, twenty-four supply chain industries were forecast to have a total of 515,000 jobs supporting natural gas production from shale in 2015, growing to 655,000 jobs by 2020. At the same time, shale gas production was estimated by the U.S. Energy Information Administration (EIA) to reach 44 billion cubic feet per day (bcf/d) in 2015 and almost 60 bcf/d by 2020. This calculates to a ratio of over 11,000 supply chain jobs per bcf/d. EIA also reports that virtually all growth in U.S. natural gas production will come from shale. The chart below identifies the supply chain industry sectors where these jobs are created:

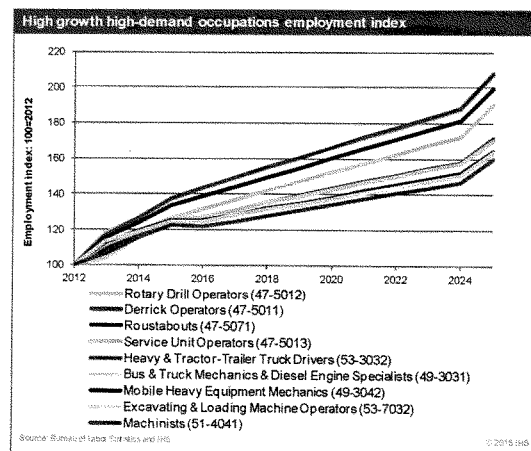
		BCF/D Natural Gas from Shale (EIA):			
		44.27		59.53	
		TOTAL JOBS		JOBS PER BCF/D	
NAICS	Supply Chain Industry	2015	2020	2015	2020
212	Sand and Gravel Mining	25,104	32,631	567	548
213	Support Activities for Drilling	35,387	46,540	799	782
23	Construction	80,362	99,021	1,815	1,663
325	Chemicals Manufacturing	10,052	13,052	227	219
326	Plastics and Rubber Products Manufacturing	5,835	7,345	132	123
327	Non-metallic mineral Products Manufacturing	3,736	4,756	84	80
331	Primary Metal Manufacturing	14,339	18,556	324	312
332	Fabricated Metal Products Manufacturing	30,165	37,710	681	633
333	Machinery Manufacturing	50,852	66,340	1,149	1,114
334	Computer and Electronic Product Manufacturing	6,768	8,530	153	143
335	Electrical Equipment and Components Manufacturing	444	560	10	9
336	Transportation Equipment Manufacturing	4,927	6,190	111	104
42	Machinery, Equipment and Supplies Wholesalers	44,739	56,520	1,011	949
441	Dealers of Motor Vehicles Parts	13,129	16,450	297	276
482	Transportation - Rail	1,953	2,495	44	42
483	Transportation - Water	387	491	9	8
484	Transportation - Truck	23,998	31,602	542	531
486	Transportation - Pipeline	811	1,003	18	17
493	Warehousing & Storage	5,075	6,428	115	108
524	Insurance	22,569	28,590	510	480
532	Rental and Leasing	8,228	10,329	186	174
541	Services - Professional, Technical and Scientific	105,412	133,587	2,381	2,244
562	Waste Management and Remediation	2,441	3,081	55	52
811	Repair and Maintenance	18,506	23,283	418	391
		515,219	655,090	11,638	11,004

Recent approvals of applications for licenses by the Department of Energy to export LNG to non-Free Trade Agreement countries anticipate that between late 2015 and 2018, liquefaction and export capacity will reach about 10 bcf/d, requiring that much additional natural gas production from shale beyond the EIA forecast. If the linear relationship between supply chain jobs and natural gas production holds, we can look forward to over 100,000 new supply chain jobs over the next four years.

That equates to an additional \$8 billion of annual income to American workers, which we know will be spent in local communities throughout the United States as these new supply chain workers improve their standards of living; consuming, paying taxes in and supporting the economies of their local communities. Using the Small Business Administration estimate that half of American workers are employed by small business, we project that of the forecast job gains, supply chain small businesses would be responsible for creating at least half of them.

Those numbers could grow substantially further, if additional LNG export license applications are approved, and as the United States expands its circle of free-trade agreement countries through agreements such as the Trans-Pacific Partnership (TPP) and the Transatlantic Trade and Investment Partnership (TTIP), facilitated by Congress' recent action to grant Trade Promotion Authority to the Administration.

It should be noted that much of this supply chain job growth will be concentrated in skill areas that require technical training but not necessarily four-year or higher degrees. Supply chain companies will be challenged to fill positions in high-growth, high-demand occupations, the need for which will as much as double between 2012 and 2025, according to IHS Economics. This chart shows the highest growth occupations.



The supply chain is truly national, and not confined to oil and natural gas producing areas. Since both natural gas and crude oil production rely on essentially the same supply chain, we can clearly see this effect by looking at the geographic distribution of job gains that occur when crude oil production grows. Of the top fifteen states by job gains if crude oil production were increased for export, ten are states in which very little or no crude oil is produced. In fact the state of Illinois, because of the prominence of manufacturing capital equipment used in energy production, ranks third behind Texas and California in jobs gained with increased shale energy production.

	Base	Potential
CA	43,129	57,338
TX	32,279	40,599
IL	17,644	26,909
NY	13,956	24,605
FL	12,213	22,481
OH	10,475	13,601
GA	7,520	13,271
MI	8,109	13,256
PA	7,325	13,251
WA	8,204	12,903
NC	7,085	12,664
MA	7,568	12,046
OK	7,628	11,006
WI	6,264	10,219
MD	6,238	9,911



#### THE SUPPLY CHAIN:

### It's Everywhere!

10 of the top 15 states  
by job gain are  
Non-producing States

New Supply Chain Jobs  
by 2018 with the  
export ban lifted

IHS Study: Unleashing the Supply Chain (March 2015)

In another example, in 2014 total unconventional energy operations in Louisiana supported 109,000 jobs, of which 66,000, or 60%, are in found in the supply chain, according to IHS Economics. These data only includes activity in support of energy produced from shale, and not conventional reservoir-based production.

In summary, exports of LNG, and for that matter all energy exports including crude oil, will support additional domestic energy production from our large and rapidly growing reserves by our innovative and productive energy sector. America's shale energy production renaissance has been the principal contributor to our emergence from the recent deep recession. It has the potential to spur substantially more job creation throughout the country if Congress acts wisely and adopts policies that facilitate exports. The particularly positive impact will be on small businesses that dominate the supply chain, who will thrive and grow on America's Main Street in all 50 states.

<sup>1</sup> IHS Economics, Supplying the Unconventional Revolution, September 2014

<sup>2</sup> IHS Economics, America's New Energy Future, Volume 1, October 2012

Chairman VITTER. Thank you very much, Mr. Mack.  
And now, we will hear from Dr. Neil Aspinwall. Doctor, welcome.

**STATEMENT OF NEIL ASPINWALL, CHANCELLOR, SOWELA  
TECHNICAL COMMUNITY COLLEGE, LAKE CHARLES, LA**

Dr. ASPINWALL. Thank you, Mr. Chairman, members of the committee.

Southwest Louisiana has been blessed with an abundance of expansion activities related to the petrochemical, liquified natural gas, LNG, and gas to liquids, GTL, industry. In fact, there are currently 85-plus billion dollars in planned industrial expansions directly related to LNG/GTL energy sector, and approximately \$30 billion in construction is already underway.

These massive and historical expansions in the petrochemical industry create the need for highly skilled workers for the oil and gas industry. Southwest Louisiana Technical Community College, or SOWELA, as it is known, is one of the 13 institutions that comprise the Louisiana Community and Technical College System, and we have been given the opportunity and responsibility to provide the training programs and services needed to produce the workforce necessary to help construct these massive industrial expansions and operate the new petrochemical plants once they begin production.

According to the Louisiana Workforce Commission, the annual completers of workforce programs necessary to fill the occupations of highest need for the industry sector expansion in the region are: construction crafts field, 9,360 workers; industrial production, 4,955 workers; welding, 4,810 workers. Since 2012, SOWELA has begun to design, create, implement, and/or expand training programs to help meet the demands of these oil and gas industrial expansions.

Programs focusing on skilled crafts such as pipefitting, millwright, welding, insulators, scaffolding, concrete forming, machining, electrician, lab analysis, and non-destructive testing have been added to the instructional program options at the college. Enrollment and high-demand programs directly related to the oil and gas industry, such as process technology and industrial instrumentation, have literally doubled in the past couple of years.

According to the Energy Sector Jobs to 2030, a global analysis published by the Institute for Sustainable Futures in 2009, the 2020 global energy sector is expected to employ an estimated 10.5 million workers. By 2030, global energy sector jobs are expected to grow by an additional 800,000 workers, totaling an estimated 11.3 million employees.

Therefore, SOWELA Technical Community College, whose mission is to provide the skills and training needed to prepare the workforce to help grow and sustain the regional, state, and national economy, must be prepared with the programs, services, and financial resources necessary to help produce this massive workforce.

In order to get the students into the workforce quicker and satisfy the hiring demands of industry, many higher education institutions are beginning to offer programs in shorter condensed formats. In fact, SOWELA created a compressed process technology program

to provide the opportunity for students to earn an Associate of Applied Science degree in just 16 weeks. The first FastTrack P-Tech cohort contained 18 students, all of which already earned advanced degrees and were placed into the workforce within six months after completion. This substantiates the fact that these energy sector jobs are highly sought after positions that have and will continue to attract individuals to the region for better employment opportunities.

As the workforce needs for the oil and gas industry become more acute, the petrochemical industry has requested and SOWELA has implemented various short-term training programs, many less than six months in length and ranging from 80 to 900 contact hours. These programs have been developed in the craft areas, such as machining, millwright, electrical, structural welding, pipe welding, scaffolding, cement forming, and HVAC, and as an example, an individual who enrolls in and successfully completes the structural welding program can immediately be hired at an hourly wage of at least \$26. So, a time commitment of six months and a program cost of approximately \$2,200 can provide the means for an individual to earn a middle class wage with great benefits which helps strengthen the local, state, and national economies.

However, this method of placing students into the workforce quicker through condensed instructional delivery formats does have a downside. Although shorter programs provide skill training in predetermined critical competency areas and reduces the number of contact hours or seat time a student needs to spend in the classroom or lab. It is this reduction in contact hours that prevents the programs from being eligible for federal financial aid. According to the U.S. Department of Education guidelines, these types of short-term condensed workforce development programs are not eligible for federal financial aid because they are not at least 600 clock hours and 15 weeks in length.

But, despite the ease at which these training programs can be created and offered and the demand from industry, the program costs still present an obstacle that prevents many of our citizens from taking advantage of the training needed to prepare them for the opportunities available through the petrochemical industry expansions. Since 84 percent of community college students work, and 60 percent work more than 20 hours per week, our students cannot afford to quit their jobs and take advantage of skills training programs in which no financial aid is available.

SOWELA, as well as other community colleges whose primary mission is workforce development, struggles to find options to help students cover the costs of enrolling in and completing these condensed industry-specific training programs and services. Fortunately, various private industries have stepped forward to provide scholarships for students seeking entry into these programs. Although greatly appreciated and highly sought after, these private business and industry scholarships are not the long-term solution to sustaining the training programs necessary for building the oil and gas industry workforce.

A more permanent and guaranteed funding source needs to be created so that the oil and gas industry and the energy sector overall can continue to be competitive and help the national economy

grow and improve. Legislation on the federal level could help provide the funding solution needed, and I hope this committee will investigate all options for federal funding assistance.

In closing, SOWELA and the Louisiana Community and Technical College System have a golden opportunity to shape the future of Louisiana and the nation as a whole by producing the workforce needed to ensure that America continues to produce the energy necessary to fuel an economy that will provide financial and economic stability, vitality, and prosperity for generations to come. Thank you.

[The prepared statement of Mr. Aspinwall follows:]

**Dr. Neil Aspinwall – Chancellor**  
**SOWELA Technical Community College**  
**Lake Charles, Louisiana**

Southwest Louisiana has been blessed with an abundance of expansion activities related to the petro-chemical, Liquefied Natural Gas (LNG), and Gas to Liquids (GTL) industry. In fact, there is currently \$85 + billion in planned industrial expansions directly related to the LNG/GTL energy sector and approximately \$30+ billion in construction is already underway. These massive and historical expansions in the petro-chemical industry create the need for highly skilled workers for the oil and gas industry. SOWELA Technical Community College, one of the thirteen institutions that comprise the Louisiana Community and Technical College System (LCTCS) has been given the opportunity and responsibility to provide the training programs and services needed to produce the workforce necessary to help construct these massive industrial expansions and operate the new petro-chemical plants once they begin production.

According to the Louisiana Workforce Commission, the annual completers of workforce programs necessary to fill the occupations of highest need for the energy sector expansion in the region are:

- Construction crafts field = 9360
- Industrial Production = 4955
- Welding = 4810

Since 2012, SOWELA has begun to design, create, implement, and/or expand training programs to help meet the demands of these oil and gas industrial expansions. Programs focusing on skilled crafts such as pipefitting, Millwright, welding, insulators, scaffolding, concrete forming, machining, sheet metal, electrician, lab analysis, and non-destructive testing have been added to instructional program options at the College. Enrollment in high demand programs directly related to the oil and gas industry such as Process Technology and Industrial Instrumentation have literally doubled in the past couple of years.

According to the Energy Sector Jobs to 2030: A Global Analysis published by the Institute for Sustainable Futures in 2009, the 2020 global energy sector is expected to employ an estimated 10.5 million workers. By 2030 global sector energy jobs are expected to grow by an additional 800,000 workers totaling an estimated 11.3 million employees.

The energy sector, comprised of small, medium and large businesses, will experience significant and steady demand for skilled workers over the next 15 years on a regional, state, national, and global level. Therefore, SOWELA Technical Community College whose mission is to provide the skills and training needed to prepare the workforce to help grow and sustain the regional, state, and national economy must be prepared with the programs, services, and financial resources necessary to help produce this massive workforce.

Meeting the workforce demands of the expanding oil and gas industry is a very daunting task which is going to require strategic efforts on the part of many collaborative partners. SOWELA has developed training partnerships with the Plumbers and Steamfitters Union, the Heat and Frost Insulators Union, the Carpenter's Union, the Millwright Union, the secondary school systems in the five-parish region, and with the Associated Builders and Contractors. Forming collaborative partnerships makes the task of identifying and training potential oil and gas workers much easier.

In order to get the students into the workforce quicker and satisfy the hiring demands of industry, many higher educational institutions are beginning to offer programs in shorter condensed formats. SOWELA has seen great success with this shortened instructional delivery format. In fact, SOWELA created a compressed Process Technology program to provide the opportunity for students to earn an Associate of Applied Science degree in just 16 weeks. The first FastTrack P-Tech cohort contained 18 students – all of which had already earned advanced degrees - and were placed into the workforce within 6 months after completion. This substantiates the fact that these energy sector jobs are highly sought after positions that have and will continue to attract individuals to the region for better employment opportunities. The oil and gas industries who are actively recruiting for these skilled craft positions are multi-national companies who provide great salary and benefits packages.

As the workforce needs for the oil and gas industry becomes more acute, the petro-chemical industry has requested and SOWELA has implemented various short-term training programs, many less than 6-months in length and ranging from 80 to 900 contact hours. These programs have been developed in the craft areas such as Machining, Millwright, Electrical, Structural Welding, Pipe Welding, Scaffolding, Cement Forming, Insulators, and HVAC. As an example, an individual who enrolls in and successfully completes the Structural Welding program can immediately be hired at an hourly wage of at least \$26. So a time commitment of six months and a program cost of approximately \$2200 can provide the means for an individual to earn a middle class wage with great benefits which helps strengthen the local, state, and national economies.

However, this method of placing students into the workforce quicker through condensed instructional delivery formats does have a down side. Although shorter condensed programs provide skill training in critical competency areas and reduce the number of contact hours or seat time a student needs to spend in the classroom or lab; it is this reduction in contact hours that prevents the programs from being eligible for federal financial aid. According to the U.S. Department of Education guidelines, these types of short-term condensed workforce development programs are not eligible for federal financial aid because they are not at least 600 clock hours and 15 weeks in length.

But despite the ease at which these training programs can be created and offered, and the demand from industry, the program costs still present an obstacle that prevents many of our citizens from taking advantage of the training needed to prepare them for the job opportunities available through the petro-chemical industry expansions.



SOWELA, as well as other community colleges whose primary mission is workforce development, struggles to find options to help students cover the costs of enrolling in and completing these condensed industry specific training programs and services.

Since 84% of community college students' work and 60% work more than 20 hours per week, our students cannot afford to quit their jobs and take advantage of skills training programs in which no financial aid is available.

Fortunately, various private industries such as CB&I, Praxair, Bechtel, and Capital One have stepped forward to provide scholarships for students seeking entry into these programs. Furthermore, one of our strongest partners is the Regional Workforce Investment Board who helps certify some of our training programs to help ensure the programs are eligible for federal, state, and local dollars through the Workforce Innovation and Opportunity Act (WIOA).

Although greatly appreciated and highly sought after, these business and industry scholarships are not the long term solution to sustaining the training programs necessary for building the oil and gas industry workforce. A more permanent and guaranteed funding source needs to be created so that the oil and gas industry and the energy sector overall can continue to be competitive and help the national economy grow and improve. Legislation on the federal level could help provide the funding solution needed and I hope this committee will investigate all options for federal funding assistance.

SOWELA and the Louisiana Community and Technical College System have a golden opportunity to shape the future of Louisiana and the nation as a whole by producing the workforce needed to ensure that America continues to produce the energy necessary to fuel an economy that will provide financial and economic stability, vitality, and prosperity for generations to come.

Chairman VITTER. Thank you very much, Doctor.  
And now, we welcome again Ms. Kateri Callahan. Welcome.

**STATEMENT OF KATERI CALLAHAN, PRESIDENT, ALLIANCE  
TO SAVE ENERGY**

Ms. CALLAHAN. Thank you, Mr. Chairman and Ranking Member and members of the committee. I truly appreciate the opportunity to testify to you today on the important role that energy efficiency can play in making small businesses more productive, more competitive, and greater jobs generators.

My organization, the Alliance to Save Energy, is a nonprofit coalition of 140 different businesses across the entire economy and institutions that are dedicated to advancing energy efficiency. We were formed way back in 1997 by Senator Chuck Percy, a Republican from Illinois, and Hubert Humphrey, a Democrat from Minnesota, and we are honored to continue the Alliance's history of bipartisan leadership.

I am particularly proud that three members of this committee serve as honorary members of the Alliance. Jeanne Shaheen is our first ever elected female Honorary Chair of the Alliance. Senator Ed Markey is the longest-serving Congressional member on our Board of Directors. And Chris Coons is our newly elected First Vice Chair. But, I would also note that we are fortunate to have Energy Committee Chair Lisa Murkowski, Senator Portman, and Senator Collins providing leadership from the other side of the aisle.

Energy efficiency is America's greatest energy resource. Since the 1970s and our founding, we have doubled energy productivity. That means we are getting twice as much GDP from each unit of energy that we consume, and this translates into real savings for America's businesses, whether they are big or small.

But, Americans can do better. We still waste over half of the energy that we consume. This means that the opportunity to double our energy productivity once again lies before us, and the rewards if we achieve that goal are enormous. We could reduce our national energy bill by a full \$527 billion while creating 1.3 million jobs. And we could lower our energy imports to represent only seven percent of our total consumption.

And, no sector of the economy has more to gain from energy efficiency than small business. As Senator Shaheen said, small businesses, and most especially small manufacturers, energy use is one of the top costs of doing business. Yet, small businesses remain a largely untapped market, as she mentioned, when it comes to energy efficiency, and there are two major reasons why.

First is knowledge. Energy is not the core business of most small enterprises, notwithstanding those that Mr. Mack talked about, and laser-focused entrepreneurs often do not have the information about technologies, programs, and incentives that could help them to reduce their energy waste.

The other big problem is capital. Small businesses rarely have investment dollars to spare, and the up-front costs for energy efficiency upgrades often inhibit investment.

Fortunately, innovative companies, utilities, and government agencies are finding ways to tackle these barriers. The Small Business Direct Install programs are a great example of how govern-

ment and businesses are cooperating to eliminate barriers and create real value. In New York, these SBDI programs have improved the facilities of over 100,000 small businesses, reducing their energy operating costs by more than a billion, and that is money that is getting poured back into the State of New York.

The programs are themselves being carried out by innovative small businesses, like Lime Energy, EnerPath, SmartWatt, and welding companies you have probably not heard of, but these companies are job generators. Just in New York, these companies have hired nearly 200 new employees and also have helped to create thousands of indirect jobs.

Across the nation, state energy offices, the industrial assessment centers, the Department of Energy, and small businesses are joining together to create these successes. One quick example is ECT Industries, which is a four-generation family-owned business that took advantage of Wisconsin's Focus on Energy Program. ECT put in efficient lighting that reduced their energy intensity in lighting by 46 percent. The project paid for itself in only eight months and they are saving over \$55,000 a year in avoided small business costs.

There are lessons that come from these successful programs that can help in scaling up energy efficiency across the entire small business sector. First, we need greater outreach to small businesses to ensure that they know about the technology, resources, and most of all, about the bottom-line benefits to cutting energy waste.

Second, building relationships with business owners and developing solutions that fit their specific needs is critical.

And, finally, leveraging existing resources, from tax incentives to loan programs to technical assistance. The federal government, through the Small Business Administration, the Department of Energy, the Department of Agriculture, and other agencies, has a significant role to play. For example, the Small Business Administration's Section 504 program that Senator Shaheen mentioned can be used as a very effective tool for overcoming the first cost and financing issues surrounding efficiency upgrades, and we look forward to working with the Senator on that program.

In addition, she has legislation pending, S. 1054, the Smart Manufacturing Leadership Act, that would direct the Department of Energy to provide assistance to small and medium-sized manufacturers in implementing smart manufacturing programs that will make them more efficient, more energy productive.

So, in closing, I want to thank the committee for allowing me this opportunity to discuss the important role of energy efficiency in increasing the competitiveness of our economy's backbone, our small businesses and our entrepreneurs. Thank you.

[The prepared statement of Ms. Callahan follows:]

**Statement**

**Kateri Callahan, President  
The Alliance to Save Energy**

**Senate Small Business & Entrepreneurship Committee Hearing on  
“Challenges and Opportunities for Small Businesses Engaged in Energy  
Development and Energy Intensive Manufacturing”**

**July 14, 2015**

Chair Senator Vitter, Ranking Member Senator Shaheen and Committee Members, thank you for the opportunity today to testify about the important role of energy efficiency in small business financial health. My name is Kateri Callahan and I am the president of the Alliance to Save Energy. I am pleased to testify on behalf of the Alliance before the Committee today concerning the important role played by energy efficiency in small business. The Alliance is a bipartisan, nonprofit coalition of nearly 140 businesses, organizations and institutions -- spanning every sector of our economy -- that work to advance energy efficiency worldwide. Founded in 1977 by Senators Charles Percy, a Republican from Illinois, and Hubert Humphrey, a Democrat from Minnesota, we are honored to continue the Alliance's 38-year history of bi-partisan leadership with 16 Members of the House and Senate currently serving as Honorary Members of our Board of Directors. Among our Honorary Board Members from this Committee who are helping us to advance energy efficiency are Alliance Honorary Chair Senator Jeanne Shaheen (D-NH), the Ranking Member of this Committee; Senator Edward Markey (D-MA); and Senator Chris Coons (D-DE), who currently serves as an Alliance Honorary Vice Chair.

Since the founding of the Alliance to Save Energy almost 38 years ago, our country has made great strides in driving energy efficiency throughout our

economy by means of new technologies, and private and public investment through adoption of sound public policies. The United States has doubled its energy productivity -- we now get twice as much gross domestic product (GDP) from each unit of energy consumed than we did in 1970's -- and this translates into real savings for American consumers and businesses on their energy bills. According to ACEEE, Americans saved \$800 billion on their collective energy bills last year thanks to energy efficient technologies.

But as considerable as the energy efficiency success story has been to date, we must continue to implement innovative and cost-effective policies to increase the pace of energy efficiency adoption in small businesses and across the entire economy. We believe we can once again double our energy productivity as a nation, this time within only the next 15 years, achieving the new goal by the year 2030: this is a bold and audacious goal, but one that is eminently doable if we enact the right policies at the federal and state levels. We have created an Alliance Commission called **Energy 2030** to promote the doubling of U.S. energy productivity across our economy over the next 15 years, which, among its goals, includes initiatives to promote innovation, promote the adoption of best practices, and encourage technical assistance to states to, among other things, help small businesses to increase their energy productivity, a goal that, if attained, would greatly boost the competitiveness of America's small businesses.

No sector of our economy has more to gain from energy efficiency than small business, which according to the Small Business Administration, employs half of America's workforce, and accounts for 44% of the total U.S. private sector payroll. The companies with the greatest impact on our economy are the smallest ones, which are responsible for two thirds of all newly created jobs in the United States.

For most small businesses, energy use is the largest cost of doing business. Yet, while small business is a relatively untapped market for energy efficiency, the barriers and challenges are much greater than in the case of large companies. Energy use underlies every aspect of a modern small business, yet small entrepreneurs typically lack the time, energy expertise and resources to devote to

improving the efficiency of their physical plant. They face barriers such as lack of information on available programs and incentives; lack of capital for energy upgrades; high financing costs; and in some cases split incentives where a small business is a tenant in someone else's building. In too many cases, energy efficiency is not even a consideration. By focusing on the "business case" for energy efficiency, and demonstrating to small businesses they can save money on energy expenditures to reinvest it in their core business, they can improve their bottom line and contribute to an improved national economy. .

There are a legion of "success stories" of companies that have already invested in energy efficiency, and have demonstrated they can improve efficiencies throughout their organization. At a time when cost savings are crucial for most small businesses and utility costs are rising, energy efficiency represents a proven pathway to increased competitiveness and organizational sustainability. I would like to cite just a few examples to the Committee:

**Lime Energy**, headquartered in Newark, New Jersey, is a national provider of energy efficiency solutions for small business customers. The company is contributing to energy efficiency by unlocking the secret of successfully implementing Demand Side Management energy efficiency programs for utilities and their small business customers. In order to drive high penetration in the small business sector, it is necessary to understand why business owners make decisions and how those decisions will directly affect their bottom line within their particular industry segment— an approach Lime Energy has refined and cultivated by working directly with over 100,000 small businesses across the country.

**Legrand**, located in West Hartford, Connecticut, provides energy products and services. The company engaged in a facility-based competition to save energy called the "Energy Marathon." As a result of persistent internal communication and incentivizes for behavioral change, Legrand saved 588,540 kWh of electricity (worth \$46,732) in just 26.2 days.

**South Shore Millwork**, is a small business providing fine architectural woodwork. Looking to improve the efficiency of their physical plant by installing

energy efficient equipment through the MASS Save Program, the company installed high efficiency lighting systems and controls, occupancy sensors, and variable speed drives at a total project cost of \$218,000. The project saved \$30,500 annually with a payback of 4.5 years, and a carbon reduction of more than two tons annually.

**Crome Deposit Corporation** of Newark, Delaware is an excellent example of a small firm improving its energy efficiency through operational projects. Working together with the Industrial Assessment Center at the University of Delaware, the company found that simply by repairing a minor gas line leak, it was able to reduce its natural gas consumption by 12%. The purchase of two chillers and implementation of a closed loop system to cool heated components resulted in an 85% reduction in water use.

There are tools already in existence today to help small and medium sized companies improve their profit margins through energy efficiency upgrades. Many of these tools are not sufficiently known in the small business community – and awareness of available resources is an area where more needs done in terms of outreach to small and medium sized companies that would benefit from accessing federal and state resources.

The Small Business Administration has many programs designed to help companies unlock the capital needed to finance energy efficiency investments. Programs like the Department of Energy's Industrial Assessment Centers play an important role in helping companies like the one mentioned in the Delaware example determine where investments in "EE" are likely to have the greatest return on investment. The EPA's Energy Star program provides resources to help small businesses to improve the efficiency of their physical plant. While new technologies and renewable energy sources are gaining in popularity, energy efficiency remains the simplest and most cost-effective way to control energy spending. The most energy-efficient buildings in America — those that have earned EPA's ENERGY STAR — use 35 percent less energy than typical buildings, and avoided energy costs in small commercial buildings can provide real help to the bottom line for small business.

Mr. Chairman, we meet at a time when the Members on both sides of the aisle and in both chambers are placing a priority on energy efficiency as energy legislation is being developed. We recently reached an important milestone with final passage in the House and subsequent enactment of S. 535, the Energy Efficiency Improvement Act, which was signed by the President on April 30.<sup>th</sup> This was the first energy bill of the 114th Congress to be signed into law. On the heels of that accomplishment we believe the timing is right to start moving more bipartisan energy efficiency bills in this session.

Two important efficiency bills that could improve the economic viability of small business and currently pending in the Senate are:

- (1) S. 1054, the Smart Manufacturing Leadership Act introduced by Senator Shaheen. This bill would increase the productivity and efficiency of the manufacturing sector by directing the Department of Energy to develop a smart manufacturing plan and to provide assistance to small and medium sized manufacturers in implementing smart manufacturing programs;
- (2) S. 720, the Energy Savings and Industrial Competitiveness Act of 2015, introduced by Senators Portman (R. OH) and Shaheen, which would benefit small businesses generally by increasing energy productivity, enhancing energy security, and contributing to economic growth, all of which will serve the interests of small business in America.

I urge the Committee to lend its active support to these two bills that will greatly benefit small business. And I applaud the Committee for providing this opportunity to focus on the backbone of America's economy: small business. This hearing and others like it will help to illuminate the successes of small business owners to improve their operating costs, and influence others in their decision to invest in energy efficiency. Thank you for this opportunity to testify, and I would be glad to respond to any questions you may have.

Respectfully submitted,

Kateri Callahan, President The Alliance to Save Energy



Chairman VITTER. Thank you very much, Ms. Callahan. And now, we will hear from Tyson Slocum. Welcome.

**STATEMENT OF TYSON SLOCUM, ENERGY PROGRAM  
DIRECTOR, PUBLIC CITIZEN**

Mr. SLOCUM. Thank you very much, Chairman Vitter, Ranking Member Shaheen, members of the committee. My name is Tyson Slocum. I direct the Energy Program at Public Citizen. We are one of America's largest consumer advocacy groups and we receive most of our funding from individual contributions of over 400,000 members across the United States, many of whom either own their own small businesses or are employed at small businesses.

So, we have been hearing a lot from certain representatives of the natural gas industry that they are in a type of crisis, that unless they are able to receive some form of legislative or regulatory relief, primarily in the form of being able to expedite natural gas exports, LNG exports, that unless they are able to get this relief, there are going to be problems ahead.

But, when I look at the data, when I look at the numbers, the natural gas industry has never been doing better, right. This past winter, the natural gas industry broke all sorts of records in terms of production. We have never produced more natural gas every day than we did this winter, and kudos to the men and women of the natural gas industry and all the small businesses and large businesses associated. We are producing so much natural gas that we just passed last year Russia to become the largest natural gas producer on the planet.

So, I can understand why the natural gas industry wants to be able to more easily sell natural gas abroad, because the last time I checked, natural gas sells for under \$3 here in the United States, whereas it is double, triple, or even five times higher than that in parts of Europe and Asia and elsewhere. So, the natural gas industry and its associated small businesses that provide important services to them, I can understand why they would want to advocate for that.

But, when I look at there are more small businesses out there that are very concerned about the prices they pay for natural gas, and there is no question that if we ramp up natural gas exports, we are going to see higher domestic prices for American consumers and American businesses, and that is not just Public Citizen saying that, that is the U.S. Energy Information Administration that has come to that very clear conclusion.

So, rather than accelerate the ability of the industry to ramp up exports, I would like to see Congress and the executive branch work to prioritize the protection of consumers and small businesses that are sensitive to natural gas price increases, and there are several things that Congress and the executive branch can do in this regard.

One is, in 1975, Congress passed a law called the Energy Policy and Conservation Act. That law did many things. One thing it did is that it directed the President to ban the export of crude oil and natural gas unless the President made a public interest determination that it was in the public interest to export that. We have got rules that the Department of Commerce put together in its short

supply regulations that significantly limit the ability of the United States to export domestically produced crude oil. The Department of Commerce never put together rules on natural gas, probably because in 1975, no one was talking about exporting natural gas. So, I think that is something that I think Congress ought to communicate, and I know that some members, like Senator Markey, have done just that.

I think that Congress ought to ensure that the public interest determinations being made right now by the Department of Energy about whether or not to export gas are more concrete, meaning that we need to ensure that exports are not going to result in higher prices for consumers. Like I said, there is no question that allowing and expediting LNG exports is going to boost elements of the natural gas production industry and associated small businesses that assist them. But, there are a lot more small businesses out there that would be harmed by the increase in prices, and we need to make sure that a public interest definition clearly states that prices cannot go up on consumers as a result of exporting natural gas.

A third thing that Congress can do is revisit efforts back in the 2005 Energy Policy Act that I was working on, along with a bunch of others, where we called for governors of states where LNG facilities are located to be able to have equal say, along with FERC, about whether or not a permit for siting an LNG facility is granted. I believe that states have a great opportunity to hear from their constituents, just as FERC does, and they ought to have a prominent role.

Thank you very much for your time, and I look forward to any questions you may have.

[The prepared statement of Mr. Slocum follows:]



## Consumer & Small Business Benefits From Limiting Natural Gas & Oil Exports

Testimony of Tyson Slocum, Energy Program Director, Public Citizen, before the  
U.S. Senate Committee on Small Business & Entrepreneurship

July 14, 2015

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Chairman Vitter, Ranking Member Shaheen and members of the Committee: thank you for the opportunity to testify today on consumer and small business benefits from limiting natural gas exports. I am Tyson Slocum, and I direct the Energy Program at Public Citizen. Public Citizen is a national consumer advocacy organization with more than 400,000 members and supporters across the country. I also serve on the U.S. Commodity Futures Trading Commission's Energy & Environmental Markets Advisory Committee.

Less than a decade ago, natural gas prices were at record highs, and the consensus response was reflected by then-Federal Reserve Chair Alan Greenspan, who prominently made the case that the U.S. had to take steps to make Liquefied Natural Gas (LNG) *imports* easier to permit.<sup>1</sup> Fast forward to today, where fracking has resulted in booming domestic natural gas production, fueling calls to make it easier to permit LNG *exports*.

My testimony will address the reasons why promoting natural gas exports is imprudent:

- Natural gas power sector demand is projected to grow due to market and regulatory factors, a trend at odds with a push to accelerate LNG exports.
- Allowing already-authorized LNG exports will result in domestic natural gas price increases, harming many small businesses and household consumers.
- Facilitating natural gas exports forces natural gas price-sensitive industrial customers to compete with foreign markets for US produced gas, undermining their current competitive advantage.
- Federal statutes appear to be in conflict over whether natural gas should be exported.
- Legislative proposals designed to expedite LNG exports are misguided.

Public Citizen recommends the following four reforms to ensure that benefits to downstream businesses and household consumers are prioritized:

1. The U.S. Department of Commerce shall promulgate rules prohibiting the export of natural gas, exempted only by a Presidential determination that such exports are in the public interest.
2. Natural gas exports can only be in the public interest if:
  - a. Prices for American consumers will not increase.
  - b. There is no interference with non-fossil fuel commercial interests, such as natural gas-intensive industrial customers, commercial fishing or tourism.
  - c. There are no detrimental impacts on public safety, the environment or exacerbation to climate change.

<sup>1</sup> [www.federalreserve.gov/boarddocs/testimony/2003/20030710/default.htm](http://www.federalreserve.gov/boarddocs/testimony/2003/20030710/default.htm)

3. In the event natural gas exports are determined to be in the public interest, Federal Energy Regulatory Commission (FERC) approval of a LNG export facility can be granted only with the support of the Governor of the State in which the facility would be located.
4. Congress provides appropriations to fund the Office of Public Participation at FERC, as authorized under 16 USC § 825q-1.

**Supply/Demand Outlook: Demand Will Grow, And Production Continues to Increase Despite Lack of Operable LNG Export Capacity**

In just the last few years, American natural gas and oil production has increased dramatically, mostly due to onshore hydraulic fracturing, or fracking. Export restrictions—in the form of Short Supply regulations for oil, and limited Liquefied Natural Gas (LNG) export terminals for gas—have resulted in an oversupplied domestic market, which has generally led to more favorable prices for downstream businesses and household consumers. Efforts to alter this dynamic by facilitating the ability to export natural gas and oil threaten to raise prices for consumers. Despite limits on exports, the oil and natural gas extraction boom continues to provide generous financial returns to domestic producers.

The lack of significant natural gas exports, coupled with continued strong domestic production, has kept natural gas prices low for the US economy relative to foreign, competing markets. In 2014, the U.S. exported 1.5 trillion cubic feet of natural gas, with 99.1 percent of those exports by pipeline to Canada and Mexico. Total U.S. exports were less than five percent of 2014 gross withdrawals of 32 trillion cubic feet.<sup>2</sup>

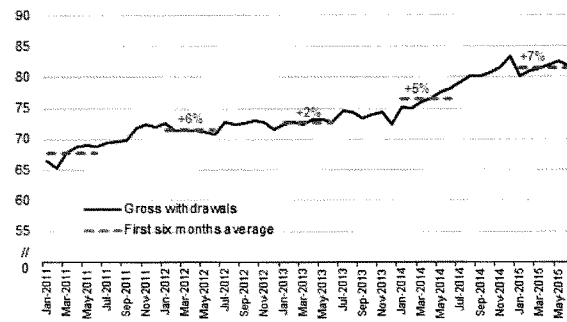
Despite low prices (much of 2015 has seen sub-\$3 per million British Thermal Unit) and a lack of completed LNG export terminals, natural gas production continues robust growth, with lower 48 production up 7 percent in 2015 vs. 2014, led by the Marcellus shale region in Pennsylvania and West Virginia. Domestic demand remains strong, growing 4.6 percent over the last year, paced by 11.6 percent growth in the electric power sector.<sup>3</sup>

<sup>2</sup> [www.eia.gov/naturalgas/](http://www.eia.gov/naturalgas/)

<sup>3</sup> [www.eia.gov/naturalgas/weekly/archive/2015/07\\_02/index.cfm](http://www.eia.gov/naturalgas/weekly/archive/2015/07_02/index.cfm)

### Natural gas gross withdrawals in the Lower 48 states

billion cubic feet per day



Source: EIA Monthly Crude Oil and Natural Gas Production Report, Bentek Energy LLC

Note: Bentek production estimates were used for May and June 2015 data points. Percentages displayed above the dashed orange bars represent the year-on-year percent difference for the first six months.



Market and regulatory trends project increased natural gas consumption in the years ahead, particularly as fuel for electric power production. Natural gas' cost competitiveness relative to coal, combined with current and future regulations that will likely

restrict coal combustion in the power sector means that natural gas demand will increase. Some analysts predict roughly 5 billion cubic feet per day increase in demand by 2020 stemming from Environmental Protection Agency proposals to regulate greenhouse gas emissions from existing power plants, which will curtail coal generation in favor of gas, a 22 percent growth over actual 2014 natural gas power plant demand levels.<sup>4</sup> Even absent the looming EPA rule, natural gas demand in the power sector has more than doubled since 1997, from 4 trillion cubic feet to 8.2 trillion cubic feet in 2014.<sup>5</sup> Natural gas has now replaced coal as the largest fuel source for power plants.<sup>6</sup>

### Allowing LNG Exports Will Raise Domestic Prices

Increasing exports, by either LNG or pipeline, has a similar impact on prices as an increase in consumption, and will, in effect, place U.S. industrial, commercial and household consumers in competition with international consumers.

In October 2014, the U.S. Energy Information Administration released a comprehensive report: *Effect of Increased Levels of Liquefied Natural Gas Exports on U.S. Energy Markets*.<sup>7</sup>

<sup>4</sup> Bill Holland, "US gas demand could increase by 3-10 Bcf/d under EPA GHG rule: analysts," May 30, 2014, *Platts*, [www.platts.com/latest-news/natural-gas/washington/us-gas-demand-could-increase-by-3-10-bcf-d-under-21698884](http://www.platts.com/latest-news/natural-gas/washington/us-gas-demand-could-increase-by-3-10-bcf-d-under-21698884)

<sup>5</sup> [www.eia.gov/dnav/ng/hist/n3045us2a.htm](http://www.eia.gov/dnav/ng/hist/n3045us2a.htm)

<sup>6</sup> <http://abcnews.go.com/Business/wireStory/natural-gas-surpasses-coal-biggest-us-electricity-source-32413857>

<sup>7</sup> [www.eia.gov/analysis/requests/fe/pdf/lng.pdf](http://www.eia.gov/analysis/requests/fe/pdf/lng.pdf)

The study concludes that LNG exports will lead to higher domestic natural gas prices, with larger LNG export volumes leading to larger domestic price increases. The EIA study calculates a number of different scenarios (high/low domestic gas production, etc), assuming three different export volume levels (12, 16 and 20 Bcfd). The study finds that rapid increases in export volumes lead to large initial price increases, moderating after a few years. On average, gas bills for residential, commercial and industrial consumers will increase between three and nine percent compared to a no-export baseline.

In 2012, the Department of Energy hired NERA Consulting to conduct a macroeconomic evaluation of LNG exports.<sup>8</sup> The report found that, since U.S. natural gas wellhead prices are significantly lower than prices in export destination countries, domestic gas prices will rise with increased levels of LNG exports. The price rise is limited to maintaining some level of price advantage, however, since a prohibitive increase in domestic wellhead prices would negate the price advantage to be sold abroad. Since significant LNG export capacity is not yet online, there are constraints to moving American-produced gas offshore. As a result, June 2015 LNG prices range from a low of \$2.35/MMBtu at Cove Point, Maryland to \$7.75 in Japan and Korea, \$7.60 in China and India, and \$6.85 in Spain.<sup>9</sup>

#### **Current Committed Exports Have Already Exceeded the High Range of the EIA Study**

The 2014 EIA study examined a high reference case of a 20 billion cubic feet/day export scenario (with a low of 12/Bcfd and a medium of 16/Bcfd).

The Department of Energy has already approved applications to export more than 40 Bcfd to countries with which we have Free Trade Agreements, and an additional 25 Bcfd to countries without FTAs.<sup>10</sup> FERC has provided approval for six under its siting authority.<sup>11</sup>

While it may be likely that not every LNG export facility receiving approval from both DOE and FERC will actually get built, if just a simple majority of the licensed terminals exports the volumes of natural gas of which they are authorized, such exports will likely overwhelm domestic supply/demand capacity.

It is important to note that the vast majority of successful LNG export applications feature long-term authorizations from DOE. These facilities, in turn, have already signed various 20-year supply agreements with foreign buyers. Such 20-year and other long-term purchase agreements are necessary to demonstrate to Wall Street and other financial backers that the export facility will have steady cash flow and guaranteed sales needed to

<sup>8</sup> [http://energy.gov/sites/prod/files/2013/04/f0/nera\\_lng\\_report.pdf](http://energy.gov/sites/prod/files/2013/04/f0/nera_lng_report.pdf)

<sup>9</sup> [www.ferc.gov/market-oversight/mkt-gas/overview/ngas-ovr-lng-wld-pr-est.pdf](http://www.ferc.gov/market-oversight/mkt-gas/overview/ngas-ovr-lng-wld-pr-est.pdf)

<sup>10</sup> <http://energy.gov/fe/downloads/summary-lng-export-applications-lower-48-states>

<sup>11</sup> [www.ferc.gov/industries/gas/indus-act/lng/lng-approved.pdf](http://www.ferc.gov/industries/gas/indus-act/lng/lng-approved.pdf)

provide returns on such capital-intensive projects. But these long-term guaranteed sales deals, if multiplied by a dozen or more operable LNG export terminals, could lock the U.S. into expensive contracts forcing the sale of natural gas abroad when it may be needed domestically.

The fact that both DOE and FERC are approving a record number of LNG export facilities makes recent Congressional proposals to expedite this review and approval process is unnecessary and harmful. For example, S.33 would force the DOE to issue a license to facility exporting LNG to a non-FTA nation 45 days after FERC's NEPA review.<sup>12</sup> This constrains the DOE's ability to make a full public interest determination, and threatens adverse market and price impacts on American consumers as a result.

#### **Conflicting Legal Standards Require Resolution**

Two federal agencies—FERC and DOE—are responsible for approving onshore LNG exports.<sup>13</sup> The Department of Energy has responsibility under the Natural Gas Act of 1938 to regulate the import and export of natural gas, and determines public interest. Amendments in Section 201 of the Energy Policy Act of 1992 (PL 102-486) directed that the "importation of such natural gas [from countries with Free Trade Agreements with the U.S.] shall be deemed to be consistent with the public interest," but there was no language on *exports*. The Energy Policy Act of 2005 (PL 109-58) added Section 311 applying the entire chapter "to the importation or exportation of natural gas in foreign commerce."<sup>14</sup> Public interest determinations on exports to non-FTA countries are made by the DOE on a case-by-case basis.

The following countries have FTAs requiring national treatment for trade in natural gas with the U.S.: Australia, Bahrain, Canada, Chile, Colombia, Dominican Republic, El Salvador, Guatemala, Honduras, Jordan, Mexico, Morocco, Nicaragua, Oman, Panama, Peru, Korea and Singapore.<sup>15</sup>

Section 311 of the Energy Policy Act of 2005 dictates that FERC "shall have the exclusive authority to approve or deny an application for the siting, construction, expansion, or operation of an LNG terminal."<sup>16</sup> The language was aimed at killing a July 2004 lawsuit filed by the State of California claiming that FERC illegally ruled in March 2004<sup>17</sup> that states have limited jurisdiction over the permitting and siting of LNG facilities inside their borders.

<sup>12</sup> [www.congress.gov/bill/114th-congress/senate-bill/33](http://www.congress.gov/bill/114th-congress/senate-bill/33)

<sup>13</sup> A third agency, the U.S. Maritime Agency, has jurisdiction over offshore LNG.

<sup>14</sup> [www.congress.gov/109/plaws/publ58/PLAW-109publ58.pdf](http://www.congress.gov/109/plaws/publ58/PLAW-109publ58.pdf)

<sup>15</sup> [www.energy.gov/fe/services/natural-gas-regulation/how-obtain-authorization-import-and-or-export-natural-gas-and-Ing](http://www.energy.gov/fe/services/natural-gas-regulation/how-obtain-authorization-import-and-or-export-natural-gas-and-Ing)

<sup>16</sup> PL 109-58.

<sup>17</sup> FERC Docket No. CP04-58, <http://elibrary.ferc.gov/idmws/common/opennat.asp?fileID=10099827>



FERC also is responsible for issuing certificates of public convenience and necessity for LNG facilities,<sup>18</sup> and is required by the National Environmental Policy Act to determine environmental impact statements for LNG facilities.

But both DOE's authority (as reflected in the 1992 and 2005 amendments) and FERC's (2005 amendments) appear to conflict with a 1975 statute. That year, Congress passed The Energy Policy and Conservation Act, which, among other things, orders that "The President shall...promulgate a rule **prohibiting the export** of crude oil and **natural gas** produced in the United States, except that the President may...exempt from such prohibition such crude oil or natural gas exports which he determines to be consistent with the national interest" [emphasis added].<sup>19</sup> The export of U.S. produced oil has since been significantly restricted with the resulting Short Supply Control Regulations adopted by the US Department of Commerce Bureau of Industry and Security.<sup>20</sup> The Department of Commerce never promulgated rules to comply with the law's mandate to also prohibit the export of natural gas.

In order to rectify this discrepancy, Congress must order the U.S. Department of Commerce to promulgate rules prohibiting the export of natural gas—allowing for public interest exemptions, as determined by the President—as required by the 1975 Energy Policy and Conservation Act. Most likely such rules will allow exports to FTA nations, since the 1992 statute appears to provide a public interest determination.

DOEs current case-by-case public interest determination is based on three broad factors: a) the domestic need for natural gas, b) whether the proposed export threatens the security of domestic natural gas supplies, and c) environmental concerns.<sup>21</sup>

For proposed LNG exports to non-FTA nations, Congress should clarify the case-by-case public interest determination used by the DOE to include:

- Approval for an LNG export terminal cannot be in the public interest if analyses show that it will result in natural gas price increases for American industrial, commercial or residential consumers.
- No interference with non-fossil fuel commercial interests, such as natural gas-intensive industrial customers, commercial fishing or tourism.
- Given the environmental and climate change impacts of fracking, a public interest determination should more explicitly address whether an export facility's approval

<sup>18</sup> Section 7 of the Natural Gas Act.

<sup>19</sup> 42 USC § 6212(b)(1)

<sup>20</sup> 15 CFR § 754.2

<sup>21</sup> See Sabine Pass Liquefaction LLC, FE Docket No. 10-111-LNG, DOE/FE Order No. 2961, p. 27-29; May 20, 2011

will have detrimental impacts on public safety, the environment or exacerbate climate change.

In addition, Congress should initiate two reforms regarding the FERC review and approval process. First, Congress should grant states the same legal rights that were provided to the Department of Defense in the Energy Policy Act of 2005. Section 311 of the Energy Policy Act of 2005 directs that FERC “shall obtain the concurrence of the Secretary of Defense before authorizing the siting, construction, expansion, or operation of liquefied natural gas facilities affecting the training or activities of an active military installation.”

A model would be Senator Dianne Feinstein’s Amendment No. 841 to the Energy Policy Act of 2005, which would prohibit FERC from approving an LNG terminal application “without the approval of the Governor of the State in which the facility would be located.”<sup>22</sup> If we can require “concurrence” approval by the Secretary of Defense for LNG terminal approval, then we should grant the same rights to Governors of states impacted by such facilities.

The second FERC-related reform is to have Congress provide appropriations to fund the Office of Public Participation at FERC, as authorized under 16 USC § 825q-1. The office was authorized as part of the 1978 Public Utility Regulatory Policies Act, but Congress never appropriated it. By creating this Office, Congress recognized that members of the public require assistance intervening before a complex, quasi-legal agency like FERC. Among the Office’s responsibilities: “coordinate assistance to the public,” and the office may “provide compensation for reasonable attorney’s fees, expert witness fees, and other costs of intervening” for the public.<sup>23</sup> The 1981 suggested appropriations for the Office was \$2.4 million, which is \$6.25 million adjusted for inflation to 2015.

### Conclusion

Recent innovations in extracting natural gas through fracking has lowered prices for consumers, but also spurred calls to expedite the export of gas. However, LNG exports will result in higher prices for America’s industrial, commercial and residential customers. The domestic natural gas market outlook forecasts higher demand here at home, forcing U.S. consumers to compete with exports. Statutory discrepancies require the attention of both the executive and legislative branches, to add natural gas to the Department of Commerce’s list of restricted exports, to better define public interest to take into account consumers, non-fossil businesses and the environment, and improve the ability of states and the public to have a say during FERC proceedings.

<sup>22</sup> [www.senate.gov/legislative/LIS/roll\\_call\\_lists/roll\\_call\\_vote\\_cfm.cfm?congress=109&session=1&vote=00146](http://www.senate.gov/legislative/LIS/roll_call_lists/roll_call_vote_cfm.cfm?congress=109&session=1&vote=00146)

<sup>23</sup> [www.law.cornell.edu/uscode/text/16/825q-1](http://www.law.cornell.edu/uscode/text/16/825q-1)

**Addendum: Testimony of Tyson Slocum before the U.S. House Small Business Committee on Crude Oil Exports on June 17, 2015:**

Few questioned the long-standing limit on exporting domestically-produced crude oil until a June 2013 memo by the American Petroleum Institute surfaced in a November 2013 Bloomberg News article describing the lobbying group's intention to "highlight potential violations of the World Trade Organization rules against [oil] export restrictions."<sup>24</sup> Since then, an oil-producer led coalition has launched an expensive media and lobbying campaign to convince lawmakers to repeal or modify this 40-year old consumer protection statute.

Their reason for seeking the law's repeal is simple: the ban limits oil producers' ability to sell their product for higher prices to foreign markets. End the export ban, and companies producing oil in the United States can make more money selling U.S. oil abroad. But that would come at the expense of higher prices for household consumers and small businesses, as the data shows that U.S. refiners are sharing their domestic oil price discount with consumers.

Of course, oil producers can't convince the public to revoke a consumer protection law on the grounds that it's keeping them from bigger profits. Instead, proponents of weakening or rescinding the oil export ban rely on three broad arguments. First, that current oil market dynamics have changed significantly from 40 years ago, rendering the law antiquated. Second, repealing the export ban will actually lower gasoline prices for households and small businesses. And third, allowing crude oil exports will strengthen US national security by adding oil diplomacy to our portfolio of tools to enhance US geopolitical interests.

All three reasons are flawed for the reasons I discuss in my testimony.

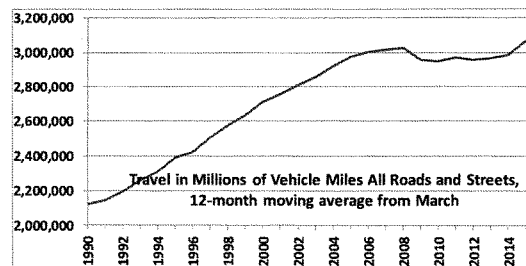
**Changing rules to facilitate oil exports is inopportune, as U.S. oil demand is increasing at the same time that onshore fracking production is set to peak and then decline**

While our supply-demand imbalance has improved significantly from just several years ago, our economy remains stubbornly addicted to oil imports. Worse, the tremendous production growth from onshore fracking will peak in less than a decade. Allowing crude oil exports at a time when U.S. oil demand is rising and U.S. oil production is set to decline is bad policy, and will leave the American economy vulnerable to increased reliance on imports, exacerbating exposure of families and small businesses to higher prices.

<sup>24</sup> [www.bloomberg.com/news/articles/2013-11-06/oil-industry-may-invoke-trade-law-to-challenge-export-ban](http://www.bloomberg.com/news/articles/2013-11-06/oil-industry-may-invoke-trade-law-to-challenge-export-ban)

Only a few years ago, America's oil policy was defined by scarcity and high prices, with the consensus solution characterized by President George W. Bush's 2006 State of the Union remarks that "America is addicted to oil," where the former Texas oil man laid out a blueprint to replace petroleum with alternatives.<sup>25</sup> At the time we were producing 5 million barrels of oil a day. But the experts and even the industry itself were blindsided by the turnaround in just a few years: improvements in fracking technology, coupled with key exemptions from federal clean water laws and rising commodity prices (until the summer of 2014, at least), resulted in a pendulum swing to 9.1 million barrels a day in the 4<sup>th</sup> quarter of 2014.<sup>26</sup>

Of course, despite this production boom we remain the world's largest importer of petroleum and petroleum products, with 9.3 million barrels per day in the 3<sup>rd</sup> quarter of 2014.<sup>27</sup> That's because the United States now holds oil's Triple Crown: we are the largest



global oil producer, the world's largest oil importer, and the world's largest oil consumer. Our voracious consumption, requiring significant imports, sets us apart from many other large oil exporting nations, most of which feature minimal oil imports (Russia, for

example, imports only 87,000 barrels of petroleum and petroleum products a day). Absent fundamental changes to consumption, it is impossible for the United States to become self-sufficient anytime soon.

U.S. oil consumption peaked at around 21 million barrels of oil per day from the 3<sup>rd</sup> quarter of 2004 through the end of 2007. American drivers and other petroleum users took 2.6 million barrels of oil off our oil balance sheet by the 1<sup>st</sup> quarter of 2012 in response to, first, high oil prices, and, second, the US economic crisis during the end of the Bush Administration in 2008. Since then however, the American economy has picked up, as we're now consuming 800,000 barrels of oil more per day as of the 3<sup>rd</sup> quarter of 2014 compared to the 1<sup>st</sup> quarter of 2012. As a result, we're using more than 19 million barrels of oil every day.

<sup>25</sup> <http://georgewbush-whitehouse.archives.gov/news/releases/2006/01/20060131-10.html>

<sup>26</sup> [eia.gov](http://eia.gov)

<sup>27</sup> [eia.gov](http://eia.gov)

America's vehicle miles traveled has been increasing since 2012,<sup>28</sup> with the International Energy Agency concluding that there has been an "increased willingness of U.S. drivers to put additional 'miles on the clock,'" with American vehicle miles traveled up 3.9 percent in the first quarter of 2015, a record high. The IEA predicts that 2015 global oil demand will increase by 1.4 million barrels a day (to total global consumption of 94 million barrels of oil day), with the growth driven in part by an increase in U.S. gasoline demand of 4.2 percent<sup>29</sup> (U.S. gasoline consumption is roughly 9 million barrels per day). U.S. sales of light trucks and SUVs are the only class of automobiles with sales growth, with pick-up truck sales up 6.8 percent from May 2014 to May 2015, and cross-over sales up 14.2 percent, while sales of more fuel-efficient cars are down 3.7 percent<sup>30</sup>—meaning that more new cars hitting the road are less fuel efficient, likely leading to higher domestic gasoline demand growth in the years to come.

At the same time that domestic oil demand is picking up, the U.S. Energy Information Administration is predicting in its reference case that domestic oil production will peak at 10.6 million barrels of oil per day in 2020, and begin to decline after that.<sup>31</sup> This is because onshore fracking, which represents much of America's oil production growth, features production decline rates fundamentally different from conventional oil. Unlike a conventional oil field, where the oil is typically easily accessed in large, central reservoir, shale (or "tight") oil features hydrocarbons that are unevenly distributed throughout the shale. While advancements in the last decade with hydrofracturing, or "fracking" (particularly horizontal drilling) have made accessible vast amounts of oil in the Bakken and Eagle Ford, these basins typically feature between 40 to 70 percent production declines after the first year—figures far, far greater than what is experienced in conventional fields. As a result, the fracking boom is a relatively short-term phenomenon, as the productivity of the fields falls off dramatically.

That is why ExxonMobil's CEO, Rex Tillerson, said in an interview in March 2015 that oil exploration in the Arctic is needed to replace the production that will be lost as America's onshore fracking production declines in the next decade.<sup>32</sup>

### **Nixing the crude oil ban will raise gasoline prices for families and small businesses**

Because the oil export ban limits producers' oil sales to the domestic market, the United States has record

Weekly U.S. Ending Stocks of Crude Oil and Petroleum Products

(Thousands of Barrels)

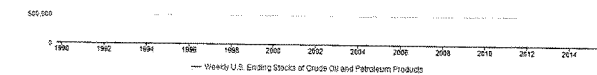
<sup>28</sup> [www.fhwa.dot.gov/policyinformation/travel\\_monitoring/tvt.cfm](http://www.fhwa.dot.gov/policyinformation/travel_monitoring/tvt.cfm)

<sup>29</sup> Summer Said & Georgi Kantchev, "Global Oil Demand Rising, IEA Says," *The Wall Street Journal*, June 12, 2015.

<sup>30</sup> [http://online.wsj.com/mdc/public/page/2\\_3022-autosales.html](http://online.wsj.com/mdc/public/page/2_3022-autosales.html)

<sup>31</sup> *Annual Energy Outlook 2015*, page 18, [www.eia.gov/forecasts/aeo/tables\\_ref.cfm](http://www.eia.gov/forecasts/aeo/tables_ref.cfm)

<sup>32</sup> Jonathan Fahey, "U.S. oil council: Shale won't last, Arctic drilling needed now," *The Associated Press*.



Source: U.S. Energy Information Administration

levels of oil in storage. Despite these strong storage levels, U.S. refinery and tank farm storage utilization is at a very manageable 63 percent for the first quarter of 2015, and only 74 percent and 57 percent for Petroleum Administration for Defense Districts (PADD) 2 (Midwest) & PADD 3 (Gulf Coast), respectively, indicating that worries earlier in the year that the US was close to breaching its storage capacity were unfounded.

These high levels of storage provide a discount for U.S. refineries, which in turn are sharing that savings with U.S. consumers, including small businesses.

As the U.S. Energy Information Administration has pointed out, U.S. gasoline prices are influenced more by the European-based Brent oil benchmark than the U.S.-based West Texas Intermediate (WTI) benchmark.<sup>33</sup>

But as storage levels have increased in the United States, American motorists and small businesses have seen a reduction in gasoline prices compared to Northwest Europe. In an analysis by Barclays Capital, the bank found that:

*Between 2008 and 2010, we estimate U.S. average gasoline prices were approximately \$4.73 a barrel higher than Northwest European premium gasoline prices. In comparison, between 2011 and 2014, the U.S. average price was approximately \$1.62 a barrel higher than Northwest Europe, while last year [2014] the U.S. price was just \$1.20 a barrel higher. **This implies U.S. consumers compared to their European counterparts have received a partial dividend for the crude export ban of an average of \$3.11 a barrel in discounted gasoline prices since 2011 and a discount of \$3.53 a barrel in 2014.** We estimate U.S. gasoline consumption at 8.92 million barrels/day (mmb/d) in 2014 and 9.03 mmb/d in 2015, **which translates to actual savings of \$11.4 billion last year and potential savings of \$10.2 billion this year.** [emphasis added]<sup>34</sup>*

Barclays Capital found the data for diesel initially

*seems to play out in the opposite fashion with diesel. In 2008-10, the average price of Northwest Europe diesel was \$1.55 a barrel cheaper compared to the average U.S. diesel price during the same time period. In 2011-14, Northwest Europe diesel averaged \$2.66 a barrel cheaper than the U.S. average price. However, we think the presence of such a swing has more to do with the strength of industrial production in the U.S. It is our opinion that if refiners were not producing diesel at maximum utilization rates with discounted crudes, actual domestic diesel prices would likely be much higher due to the industrial demand seen today.<sup>35</sup>*

<sup>33</sup> "U.S. gasoline prices move with Brent rather than WTI crude oil," November 3, 2014, [www.eia.gov/todayinenergy/detail.cfm?id=18651](http://www.eia.gov/todayinenergy/detail.cfm?id=18651)

<sup>34</sup> Paul Y. Cheng, "Crude Export Ban: Impact on Gasoline Prices, 2015 Edition," May 13, 2015.

<sup>35</sup> Paul Y. Cheng, "Crude Export Ban: Impact on Gasoline Prices, 2015 Edition," May 13, 2015.

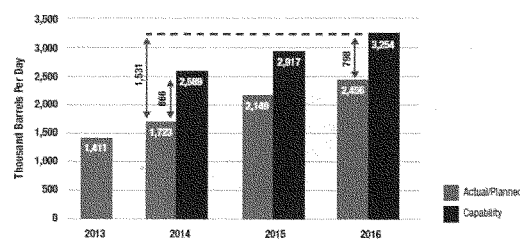
Indeed, EIA data shows that low natural gas and oil prices have helped spur the industrial sector, which has experienced significant recent growth, and the agency predicts +0.7 percent annual growth in the sector through 2040.<sup>36</sup>

The Barclays Capital research undercuts one of the primary arguments of the five leading studies that conclude ending the export ban would actually *lower* gasoline prices, as the Barclays analysis—using actual data, rather than theoretical—demonstrates the value that the export ban has in providing surplus oil at a price discount for American consumers. Contrary to many of the studies that claim that US refiners are pocketing the difference between the higher Brent benchmark and the discounted WTI, that actually some of the savings is in fact being passed to U.S. households and small businesses.

#### U.S. Refiners Can Process Fracked Light Crude

Some proponents of lifting the export ban claim that it's necessary because U.S. refiners—retooled over the years to process heavy, sour crude—cannot handle the new volumes of

Planned Use of Super Light Crude Oil vs. Capability to Use



domestic light crude coming from the Bakken and Eagle Ford. But a September 2014 survey of the U.S. refining industry reveals that we have domestic capacity capable of handling fracked oil.<sup>37</sup> The market has responded by substituting domestic

light oil for imported light oil, primarily Nigerian: that nation's imports fell from 1.1 million barrels of oil a day in July 2010 to just 98,000 in March 2015.<sup>38</sup> U.S. light oil has replaced Nigerian oil in American refineries. In addition, U.S. refiners have responded by investing in refinery modifications to handle more U.S. light oil. According to the survey of companies controlling 61 percent of U.S. refining capacity, refineries will be able to handle more than 3.2 million barrels of oil a day of super light crude in 2016, more than the projected 2.5 million daily barrels of production forecast for that year.

#### Countering Reports Claiming Lifting the Export Ban Will Benefit Consumers

<sup>36</sup> "U.S. energy demand slows except for industrial, commercial sectors," April 29, 2015, [www.eia.gov/todayinenergy/detail.cfm?id=21012](http://www.eia.gov/todayinenergy/detail.cfm?id=21012)

<sup>37</sup> *An Analysis of U.S. Light Tight Oil Absorption Capacity*, Baker & O'Brien Inc.

[www.bakerobrien.com/news/Consumers\\_and\\_Refiners\\_United\\_for\\_Domestic\\_Energy\\_Releases\\_Results\\_of\\_Baker\\_and\\_O'Brien\\_Analysis/](http://www.bakerobrien.com/news/Consumers_and_Refiners_United_for_Domestic_Energy_Releases_Results_of_Baker_and_O'Brien_Analysis/)

<sup>38</sup> [www.eia.gov/dnav/pet/pet\\_move\\_impqus\\_a2\\_nus\\_ep00\\_im0\\_mbbbl\\_m.htm](http://www.eia.gov/dnav/pet/pet_move_impqus_a2_nus_ep00_im0_mbbbl_m.htm)

Below is a summary of the five leading studies purporting to show consumer benefits from lifting the export ban:

- In September 2014, NERA Consulting performed a study for the Brookings Institute that concluded that “2015 gasoline prices decline by \$0.09/gallon if the ban on crude oil is lifted entirely in 2015, while we see no impact on gasoline prices from 2025 through the model horizon of 2035.”<sup>39</sup> I am not aware of who funded this specific study, but research by the Washington Post shows that Brookings received contributions in 2013 in excess of \$100,000 from Chevron, Shell and Statoil, and contributions in excess of \$250,000 from ExxonMobil.<sup>40</sup> The study claims that US producers will be able to sell their oil for higher prices, providing an economic benefit; that refiners currently processing oil will be able to deploy capital associated with their refinery operations elsewhere in the economy, and that US exports will lower the price of Brent, thereby lowering US gasoline prices.
- In May 2014 ICF International was hired by the American Petroleum Institute to produce a report on the impacts of lifting the oil export ban, finding that the Brent price will drop with the resulting flood of U.S. exports.<sup>41</sup>
- IHS was hired by ConocoPhillips, ExxonMobil, Halliburton, Baker Hughes and Noble Energy, and their report also concludes that ending the ban will boost global supplies and “will result in lower global oil prices,” including in the United States.<sup>42</sup>
- Rice University’s Baker Institute for Public Policy found that US refiners will continue to process imported oil no matter how much additional domestic crude production occurs, because they are tooled to process more sour blends found in certain imports.<sup>43</sup>
- Resources for the Future finds that “assuming no OPEC response,” the resulting flood of US exports following the lifting of the ban would lower oil and gasoline prices.<sup>44</sup>

Outside of the Barclays Capital data that undercuts the theoretical arguments that US refiners don’t share discounts with US consumers, there is a major flaw in the assumptions of all these studies: they assume that some measure of U.S. exports in a sea of global demand of 94 million barrels of oil a day will not be offset by the multitude of variables that impact global supply and demand.

<sup>39</sup> [www.nera.com/content/dam/nera/publications/2014/NERA\\_Crude\\_Oil\\_Export\\_Study\\_Sept\\_2014\\_FINAL.pdf](http://www.nera.com/content/dam/nera/publications/2014/NERA_Crude_Oil_Export_Study_Sept_2014_FINAL.pdf)

<sup>40</sup> [www.washingtonpost.com/wp-srv/special/politics/brookings-institution-2014/](http://www.washingtonpost.com/wp-srv/special/politics/brookings-institution-2014/)

<sup>41</sup> [www.icfi.com/insights/projects/energy/us-crude-oil-exports](http://www.icfi.com/insights/projects/energy/us-crude-oil-exports)

<sup>42</sup> [www.ihs.com/info/0514/crude-oil.html](http://www.ihs.com/info/0514/crude-oil.html)

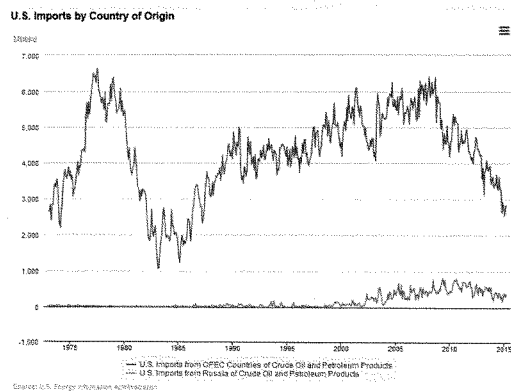
<sup>43</sup> <http://bakerinstitute.org/research/lift-or-not-lift-us-crude-oil-export-ban-implications-price-and-energy-security/>

<sup>44</sup> [www.rff.org/RFF/Documents/RFF-IB-14-03-REV.pdf](http://www.rff.org/RFF/Documents/RFF-IB-14-03-REV.pdf)



For example, an increase in U.S. oil exports could be matched by a production cut by OPEC or Russia. A supply disruption in the Middle East or Venezuela could occur, offsetting the U.S. increase. Demand growth could accelerate in the U.S. or Asia or Europe, displacing the new U.S. supply. The point is that commodity markets, and crude oil in particular, are notoriously fickle, volatile and unpredictable, so the confidence that so many consultants have in their predictive models seems more than a little overstated. And, of course, if ExxonMobil's CEO is correct that the window of opportunity of America's fracking boom is closing because of declining productivity rates, then the ability of U.S. producers to maintain effective levels of exports is compromised after 2020.

Halliburton's CEO explained recently that when oil exceeds \$100/barrel, oil companies are "printing money like crazy," and falling prices simply force companies to become more efficient.<sup>45</sup> Discarding the export ban would prop prices up and dull the incentive to innovate. Shale frackers will continue to return value to shareholders with the export ban in place.



Oil-exports-as-an-economic policy sounds a lot like a Nigerian model of growth, a one-trick pony latching the US to the perils of volatily-priced finite natural resources. Look to North Dakota's<sup>46</sup> and Texas'<sup>47</sup> current budget woes to see how tethering growth to fickle commodity prices produces a boom and bust economy. What sets America apart is not our aptitude at pulling Dinosaur

remnants out of the ground, but the value-added of our manufacturing and high tech innovation—competing sectors threatened by the higher petroleum product prices that will result from exporting. Oil is literally a fuel for economic activity. To increase the cost of that feedstock would benefit oil extractors at the expense of everyone else.

<sup>45</sup> [www.bloomberg.com/news/articles/2014-10-28/crude-at-80-a-barrel-no-sweat-say-oil-producer-ceos](http://www.bloomberg.com/news/articles/2014-10-28/crude-at-80-a-barrel-no-sweat-say-oil-producer-ceos)

<sup>46</sup> Jennifer Brooks, "Plummeting oil prices cut North Dakota revenue forecast in half," *StarTribune*, January 30, 2015, [www.startribune.com/plummeting-oil-prices-cut-north-dakota-revenue-forecast/290274701/](http://www.startribune.com/plummeting-oil-prices-cut-north-dakota-revenue-forecast/290274701/)

<sup>47</sup> Manny Fernandez & Jeremy Alford, "Some States See Budgets at Risk as Oil Price Falls," *The New York Times*, December 26, 2014, [www.nytimes.com/2014/12/27/us/falling-oil-prices-have-ripple-effect-in-texas-louisiana-oklahoma.html](http://www.nytimes.com/2014/12/27/us/falling-oil-prices-have-ripple-effect-in-texas-louisiana-oklahoma.html)

**Foreign policy benefits of exporting US oil are limited or nonexistent, and will only encourage expanded oil imports**

A third argument made by proponents seeking to repeal the oil export ban is that U.S. exports can serve as a lever to increase American influence for geopolitical ills. Such “Commodity Diplomacy” is unlikely to succeed, first, because the United States remains dependent upon many of the countries (OPEC, Russia) identified as targets of US exports. For example, a bipartisan group of members of congress have endorsed legislation to allow certain U.S. allies to receive crude oil shipments from the U.S. upon request. The primary targets of such a policy appear to be countries currently dependent on Russian oil.

US oil exports can’t undercut countries like Russia and elements of the Middle East without significant impacts to supplying the US market—remember, America still imports 9 million barrels of petroleum and petroleum products every day. Booming domestic production hasn’t brought us anywhere near oil independence. We remain vulnerable to international supply shocks and punishing price swings.

And we remain a significant importer of petroleum and petroleum products from OPEC nations and Russia—we import more than 3 million barrels of oil a day from these countries, including nearly 400,000 barrels of oil a day from Russia. Before we rush to use oil as a geopolitical weapon, we should probably ensure that we are not buying oil from the countries we’re seeking to counter. Indeed, increased U.S. exports for geopolitical purposes will require additional levels of import to meet our growing domestic demand.

In addition, the Congressional Research Service found that markets—and not political criteria such as legislation giving certain nations Most Favored Status for our oil—were the only effective determination for potential oil export destinations.<sup>48</sup>

**Conclusion**

Proponents of repealing the 40-year old ban on crude oil exports make claims that doing so is necessary because oil market dynamics have changed since the law was adopted; that allowing exports will lower gasoline prices for Americans; and that exports can provide geopolitical benefits for American national security and our economy. Unfortunately, oil exports can successfully fulfill none of these goals.

Instead, lifting the export ban will erode surplus domestic stockpiles, and allow domestic oil producers to sell oil overseas for higher prices than what they are able to charge domestically. This will result in higher gasoline prices for U.S. motorists and small businesses. Furthermore, U.S. oil markets will likely experience increased demand and

<sup>48</sup> Phillip Brown & Robert Pirog, “Potential Market Effects of Removing Crude Oil Export Restrictions: Eastern Europe,” May 29, 2015.

restricted supply in the next decade, compromising the ability to utilize U.S. oil for export. And use of exports to enhance U.S. geopolitical aims is limited due to the ability of outside supply/demand variables to undercut strategic goals.

One segment of the economy—the oil industry—is waging a campaign to convince a skeptical public that an economic protection statute is no longer needed, sponsoring studies employing dubious calculations that Americans will be better off shipping our crude directly to China. We must learn from Nigeria, Russia and Venezuela that an economy that prioritizes raw natural resource exports fails to properly develop the true engines of prosperity. Any informed observer of energy markets today recognizes that the real revolution is in clean tech technology. Solar power will be cheaper than fossil fuels in 47 states by 2016. Tesla is building a battery factory that will deliver energy storage at rates lower than the current grid. Exporting oil is great for stagnating states but terrible for success.

Chairman VITTER. Okay. Thank you very much.

I am going to reserve my time for later and invite Senator Shaheen for questions.

Senator SHAHEEN. Thank you very much, Mr. Chairman.

The U.S. industrial sector uses about 30 percent of all energy, and it is more energy than is used by any other sector of our economy. As we think about how do we address the costs of economy for small businesses, I wonder, Ms. Callahan, if you could talk about some of the market barriers that exist to deploying more energy efficiency in the manufacturing sector and why we should think about policies that can help fix these roadblocks.

Ms. CALLAHAN. Thank you very much, Senator. One of the things that is interesting about small business and small manufacturing, the challenges are really twofold, and the first challenge is that while they are huge consumers—they use about 50 percent, the small businesses, of that energy that is consumed—but it is very diffuse and it is used in very, very different ways. So, it makes it kind of a tough market to tackle. So, that is a big challenge.

And then the second that is correlated to that is that these businesses are focused largely on doing other things, and so if they have spare capital or they have access to capital, they are tempted to spend it in other ways, and so you need to talk to small businesses in terms of, well, if you can save \$55,000 a year, how many cups of coffee would you have to manufacture, or how many dresses would you have to sew and sell in order to get that kind of bottom line profit.

So, it means that you have to get really personal with the business owner, the man or the woman that is running the business, and understand. So, we are at a point in time where we are seeing that be able to happen through these programs like SBDI, because the data analytics are getting there. The people that are offering services are able to go in on an iPad and show folks what kind of savings are going to be realized.

So, in order to get it more at scale, we have got to be able to take it out of the five or six states that are doing that kind of work and put it nationwide, and a key to it and the data analytics, also, is getting standard offerings for financial assistance. So, your program, the 504(b) program, the Department of Agriculture's REAP loan program, those kind of things are going to be essential, because we have got—banks are lining up, but they are not willing to take the risk and they do not have the data necessary to do the deals and the deal flow. So, we have got to work on that.

Senator SHAHEEN. So, you talked a little bit in your testimony about ways in which we can help small businesses get access to some of the efficiency programs. Do you have any—what has been the experience of the Alliance in what is the best way to get the attention of small businesses and provide that help?

Ms. CALLAHAN. Again, I think that it is—unfortunately, it has to be done at the local level and through local partners and one-on-one. But, the role that government can play can be in helping to make sure that information, tools, technical assistance is provided, and we can train the trainers, if you will. So, when you have the small business counselors in states, when you have these manufacturing extension partnerships, making sure that they understand

how to talk to folks about energy efficiency, what is available, what the resources are that are already there, whether there are state tax incentives or, hopefully again someday, federal tax incentives, that will allow people to get the job done.

So, I do think there is a role for federal government, but you have got to meet these folks where they live.

Senator SHAHEEN. Thank you.

Mr. Slocum, living in New England, we have some special challenges with respect to access to gas, natural gas in particular. Right now, we are experiencing real difficulties. We have gone from 15 percent dependence on natural gas in New Hampshire to almost 50 percent dependence, and getting the gas there is challenging.

So, can you talk about what the projections are for the impact on us in New England if we start exporting LNG. Will that have an impact on the cost of gas, which is already very high?

Mr. SLOCUM. Yes, absolutely. There are some exports to Canada. You know, we export about a trillion and a half cubic feet of gas, which is less than five percent of our total annual production, mainly to Canada and Mexico, and there is a significant amount of that coming out of the New England area as well as other areas.

New England has a lot of special challenges. I do agree that there are some infrastructure constraints. But, there are also some power market regulatory problems in New England. For example, last year, I, along with the Connecticut Attorney General, helped to uncover a billion and a half dollar market manipulation by a Cayman Islands private equity firm called Energy Capital Partners that intentionally shut down a power plant in order to game the New England ISO's capacity auction.

So, that was a billion and a half dollars in increased cost, not because of problems of natural gas infrastructure constraints, but because of incredibly poorly written market rules. And, so, this is something we are currently involved in litigation with the Federal Energy Regulatory Commission to get them to actually do something about that issue. But, I think that some big challenges with New England in the power market lie with the ability to have a more transparent and accountable independent system operator there.

Senator SHAHEEN. Well, I look forward to hearing some of your ideas about the regulatory challenges, because, certainly, I think we can benefit from that.

And, Mr. Chairman, if you would give me just a few more seconds to point out that the SBA scorecard on how federal agencies are doing in reaching their small business contracting goals has just come out, and I note that one of the Departments that has been way below its contracting goals and actually received an F was the Department of Energy. And, so, I would hope that all of us can try and work on that as we think about how we encourage small businesses with their use of energy, because, certainly, making sure that they get access to those contracts is a very important piece of what we need to do.

Thank you all very much.

Chairman VITTER. Absolutely, and that will be made part of the record.

[The information follows:]

FY2014 Scorecard Summary By Prime Spend (with Sub and Plan Progress)														
Agency	Total Dollars Contracted	Prime Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %	Sub Goal Business %
Government-Wide Performance	38,824,035,627	22.00%	24.85%	81,851,653,649	9.45%	4.85%	3.45%	1.82%	34.85%	31.00%	8.00%	2.40%	1.70%	1.30%
Department of Defense	291,399,187,297	21.35%	23.47%	54,318,456,913	8.95%	3.97%	3.04%	1.92%	38.17%	33.27%	8.00%	2.10%	1.50%	1.00%
Department of Health and Human Services	17,025,053,254	21.65%	21.45%	4,522,612,868	6.81%	3.42%	1.97%	0.91%	33.00%	32.50%	5.00%	1.40%	0.90%	0.50%
Department of Homeland Security	19,025,053,254	34.77%	34.42%	6,349,432,659	8.35%	3.42%	18.71%	1.50%	17.00%	19.60%	2.00%	0.90%	0.90%	0.90%
Department of Justice	13,296,133,785	31.75%	35.00%	4,061,952,487	14.59%	7.37%	6.19%	3.80%	43.00%	49.40%	6.00%	3.00%	1.50%	1.50%
Department of State	8,351,356,268	29.23%	32.45%	2,060,840,416	9.84%	5.65%	3.57%	1.00%	42.00%	33.80%	6.10%	1.90%	1.00%	0.90%
Department of Agriculture	5,532,569,837	52.10%	53.68%	2,970,196,083	14.08%	9.69%	3.80%	3.00%	21.50%	28.10%	1.80%	0.60%	0.60%	0.60%
Department of Education	3,915,553,922	37.80%	43.64%	1,465,381,852	25.45%	9.71%	5.79%	1.97%	46.00%	38.20%	3.40%	0.60%	0.60%	0.60%
Department of the Interior	2,710,666,039	57.53%	55.27%	1,489,242,215	23.57%	11.21%	4.77%	1.00%	30.00%	42.60%	7.70%	1.20%	1.20%	1.20%
Department of Commerce	4,024,018,787	34.42%	41.00%	1,649,658,768	17.32%	12.28%	4.77%	1.00%	40.00%	44.60%	9.40%	1.20%	1.20%	1.20%
Department of Labor	2,084,412,803	35.40%	38.00%	829,862,469	4.89%	8.51%	3.88%	1.71%	40.00%	44.60%	9.40%	1.20%	1.20%	1.20%
Department of Transportation	2,891,762,233	19.92%	28.65%	679,862,469	4.89%	8.51%	3.88%	1.71%	40.00%	44.60%	9.40%	1.20%	1.20%	1.20%
Department of Housing and Urban Development	2,411,490,817	40.11%	40.77%	874,722,357	15.37%	8.51%	3.88%	1.71%	40.00%	44.60%	9.40%	1.20%	1.20%	1.20%
Office of Personnel Management	1,238,255,201	40.72%	40.32%	489,657,842	16.49%	14.71%	3.67%	0.90%	55.00%	68.50%	7.00%	1.40%	1.40%	1.40%
Agency for International Development	873,716,900	20.18%	23.48%	204,867,987	10.14%	9.03%	0.49%	2.94%	60.00%	68.50%	10.80%	3.40%	3.40%	3.40%
Small Business Administration	1,540,732,059	12.35%	20.81%	289,865,694	13.69%	6.42%	3.88%	0.72%	23.00%	29.30%	6.00%	2.40%	2.40%	2.40%
National Science Foundation	273,008,848	15.86%	17.00%	46,118,648	9.19%	4.83%	5.23%	1.80%	24.00%	26.60%	8.40%	1.60%	1.60%	1.60%
National Regulatory Commission	245,302,042	31.50%	35.52%	81,100,606	18.05%	10.08%	4.47%	2.55%	40.00%	40.00%	23.00%	0.30%	0.30%	0.30%
Small Business Administration	140,263,771	68.00%	77.48%	108,675,870	47.80%	23.75%	4.47%	6.88%	25.00%	15.40%	0.00%	1.00%	1.00%	1.00%

**Business & Government Rating Scale**  
 A+ = 100%  
 A = 90%  
 B = 80%  
 C = 70%  
 D = 60%  
 E = 50%  
 F = 40%  
 G = 30%  
 H = 20%  
 I = 10%  
 J = 0%

**Plan Progress Report Rating Scale**  
 A+ = 100%  
 A = 90%  
 B = 80%  
 C = 70%  
 D = 60%  
 E = 50%  
 F = 40%  
 G = 30%  
 H = 20%  
 I = 10%  
 J = 0%

**Count of**  
 A+ = 1  
 A = 1  
 B = 1  
 C = 1  
 D = 1  
 E = 1  
 F = 1  
 G = 1  
 H = 1  
 I = 1  
 J = 1  
 Total = 12

Chairman VITTER. Now, Senator Enzi.

Senator ENZI. Thank you, Mr. Chairman, and thank you for holding this timely hearing with a real discussion about how the nation's small businesses are accomplishing things in the energy sector, how they are stymied by some of the regulations, and what can be done to make things more productive and more efficient in a timely way.

I want to thank our distinguished panel, too, for taking the time to come and share your expertise. I hope that you will be open to written questions. I am the accountant on here and I try to reserve my number questions for written questions. That way, people do not go to sleep in the audience.

[Laughter.]

But, energy is one of the main drivers of our nation's economy and it is a major driver of Wyoming's economy. We produce 40 percent of the nation's coal, and let me just take a moment to let that sink in. That is the sector that we are trying to discourage from producing any low-cost energy.

In fact, in Colorado, there was just an attempt, and Senator Gardner was here earlier, a company that got permitted and has been producing coal successfully within their permit for eight years was just told that they have to redo their Environmental Impact Statement because they failed to take into consideration the impact where the coal is burned. At the time that you apply for a permit for a coal mine, you do not know where the coal is going to be burned. You are hoping for customers. You are planning on customers. You are counting on customers. But, you do not know where they are going to be. Now, the power plants themselves have to go through an Environmental Impact Statement, and that is where the local impacts of burning coal would be taken into consideration and have to be ameliorated.

So, this looks like a major attempt to just shut down all energy, and they picked on a small business to begin with, which, of course, does not have the resources, probably, to fight it. I am hoping that some of the bigger companies will join into that.

But, I am in favor of all of the energy and all of the energy efficiency and really believe that we are a country of innovators. We can do anything. We can do it better. We have to do it better. But, it cannot be better if it gets shut down.

On the Health, Education, Labor, and Pensions Committee, we had a problem with an underground, now two underground mines in West Virginia collapsing and taking some lives, and one of the things we had discovered during that was that for quite a while, the underground mining was going downhill, and when it went downhill, nobody invented anything for underground mining, let alone safety equipment. So, when the economy came back and that was necessary and they started producing it again, they did not have the latest equipment for being able to do it.

In Wyoming, General Electric wanted to do a big project to have clean coal, and they postponed it because they said coal is going to be done in. There is not going to be any coal production. And, so, what use would it be if we found a better way to burn coal. Fortunately, the University of Wyoming did not buy into that. They have

a solar project that will separate hydrogen from water, burn it with coal, and make coal better.

We believe in solar and wind. Denver is the Mile High City. You have got to go uphill to get to Wyoming. So, we are high plains and the wind really blows. In fact, the wind turbines there have to be designed so that when the winds get above 80 miles an hour, they turn into the wind and shut down. Otherwise, the whole tower blows apart.

But, we are having trouble getting power lines to them. You know, the power has to get to a customer before it is of any use, and most of our state is federal land and they are not interested in getting right-of-ways for power lines or pipelines. Of course, that is probably part of the reason why there is a problem getting natural gas to New England, getting pipelines that would get it there.

So, I am hoping that out of this we can come up with some solutions that will make all business improve and be better.

I have a question on the export policy. If the price goes below the cost of producing natural gas, it will not be produced. In fact, we are kind of at that situation right now. There will not be more wells, and eventually, we will be back in a situation of needing more and we will not have the talent, so we will be relying on the community colleges to quickly train people to do that, but it is hard to get somebody to go into a sector where the jobs have decreased.

And, I see that I am going to run out of time before I can ask the question, so I will submit the questions to you, and I have another one on workforce training, too. I watched the effect of OPEC, who can manipulate our prices without changing their production at all, just rumoring their production. And then after they have killed off all of the workers that have the technical capability to do what we need to do, they raise the price with the same rumors, no change in their production, and they make a lot of money off of us.

I remember when we were saddled with the—we said some comments about Saudi Arabia and they cut us off for a while, and there are gas lines all over the United States and everybody said, we need to have energy independence. Well, we are on the verge of energy independence, but we are doing everything we can to stifle it.

I yield. Thank you.

Chairman VITTER. Thank you very much, Senator.

Now, Senator Markey.

Senator MARKEY. Thank you, Mr. Chairman, very much.

The Department of Energy has determined that if even less than half of all of the LNG that has been approved by the Department of Energy to be exported gets exported, it could lead to a 50 percent increase in the price of natural gas for people in America. It is just supply and demand 101. The less supply we have because we send it overseas, the higher the prices are going to go here.

And, of course, if you are an oil company or a natural gas company, you want to sell it. Mr. Slocum mentioned this. In Europe, it is three or four times higher, the price you can get. In Asia, it might be five times higher, the price you can get. So, send it to China, they say.

But, the truth is that the less there is here, is the higher the price is going to be for the utility industry, the higher the price is



going to be for consumers, the higher the price is going to be for manufacturers here in the United States. We have created 700,000 new manufacturing jobs in the United States in the last four years, and there are more on the way, but not if you increase by 50 percent the price of natural gas. That is the feedstock.

And, so, Mr. Slocum, can you talk about that and what the potential impact could be on the utility and manufacturing and consumer sector in America.

Mr. SLOCUM. Absolutely, Senator Markey. There is no question that if you accelerate or ramp up the rate of exporting natural gas overseas, you are forcing U.S. consumers in the power sector and the industrial sector and in the household sector and in the commercial small business sector to compete with foreign markets where the price of natural gas is significantly higher than it is in the United States. And, so, if you are in the oil and gas industry, you are going to, understandably so, prioritize infrastructure investment to move your fracked natural gas to LNG terminals for export rather than, say, investing in additional pipeline capacity to serve power plants in New England or elsewhere.

And, so, that is why the Energy Information Administration concludes that if you significantly increase the rate of natural gas exports, it is absolutely going to raise domestic prices for American consumers.

Senator MARKEY. Now, the more that we use the natural gas here in our manufacturing sector, the more likely that the products that are created with it will be made here and will be exported rather than letting the natural gas get into the hands of the Europeans and the Chinese. Then they will sell the finished product back to the United States. So, what is that relationship, between low-priced natural gas as a feedstock into the manufacturing sector of America and the wealth, the jobs that are created here?

Mr. SLOCUM. Yes. I am a big believer that the dynamic features of the U.S. economy are the value added and the role of technology in adding to that value. And, simply exporting raw materials—I understand that fracking has been an unbelievable revolution of technology and industriousness by American ingenuity, but at the end of the day, you are simply exporting a raw material that there is robust demand for domestically to use as a feedstock or to use as a more environmentally and climate-friendly fuel in the power sector—

Senator MARKEY. So, Mr. Slocum, so a lot of the advocates for exporting natural gas or exporting oil—even though we are not energy independent, we are talking about exporting oil and we are not energy independent. We are still importing five million barrels of oil a day. How crazy is that, to export the oil we have when we are still importing five million barrels a day.

But, they keep saying, well, it is like any other product. It would be like exporting a widget or a computer chip, that oil and natural gas should be the same. But, we do not send young men and women over to the Middle East to protect the widget market or to protect the silicon chip market. We do it because we want oil to come in from the Middle East.

Now, Mr. Slocum, if we just converted seven million big trucks and buses over to natural gas vehicles, it would be the equivalent

of all of the oil which we still import on a daily basis from the Persian Gulf. But, if we increase the price by 50 percent, you know for sure that is not going to happen. So, would that not be a high objective that we should have, given the headlines above the fold on Iran and Iraq and all the other Middle Eastern countries on a daily basis?

Mr. SLOCUM. Absolutely. There is no question, even with the record amounts of domestic production that the United States has had in crude oil, we are still vulnerable to international factors, because oil, unlike natural gas, is priced due to global benchmarks and what is going on in the Middle East or China. And, so, as a result, it would be beneficial, I believe, for the U.S. economy, particularly in the transportation sector, to see an increased use of natural gas. It has got certain environmental benefits relative to petroleum products as a transportation fuel. And the bottom line is making sure that the transportation sector has access to affordable prices.

Senator MARKEY. Massachusetts consumers right now are paying \$2.76 a gallon for gasoline at the height of the summer driving, which is down 95 percent from last summer, 95 percent down. Now, what if we start exporting oil out of our country? What would that mean for consumers in Massachusetts in terms of an increase in the price of gasoline?

Mr. SLOCUM. Well, I actually testified before the House Small Business Committee last month specifically around oil exports, and again, there, the data is very clear that undoing this 1975 virtual ban on exporting crude oil will result in higher prices for American consumers.

Senator MARKEY. So, we finally get a surplus. We finally have oil and gas here domestically, and the first thought of the oil and gas industry is export it out of the country before our consumers, our manufacturers, our utilities get the benefit from it. It is just wrong. It is bad policy. It will help our economy dramatically if we keep it here at a low price.

Thank you, Mr. Chairman.

Chairman VITTER. To balance the record, let me just hit a few things. First of all, the Obama Administration's Department of Energy has conducted two studies over the last few years looking at potential price impacts of exporting LNG and those studies have very different conclusions than what Senator Markey was describing. So, we will make those part of the record.

[The information follows:]

23 April 2013

## Macroeconomic Impacts of LNG Exports from the United States<sup>1</sup>

<sup>1</sup> This article was published in *AGI Energia*



By **W. David Montgomery<sup>2</sup>**  
 and **Sugandha D. Tuladhar<sup>3</sup>**

### Introduction

The United States (U.S.) has witnessed a significant shift in natural gas production in the past five years. Optimism about shale gas potential and accelerated recovery has created a shale gas boom. The belief that U.S. would continue to be a net importer of natural gas in the foreseeable future has completely changed. U.S. shale gas production has increased rapidly due to advances in hydraulic fracturing and horizontal drilling techniques that have reduced production costs. The full-cycle cost of shale gas production dropped by about 40% to 50% relative to the cost of conventional natural gas extraction in 2011.<sup>4</sup> As a result, the outlook for natural gas production is more optimistic now than ever before. According to the latest Annual Energy Outlook 2013 (AEO 2013), the Energy Information Administration (EIA) projects the U.S. natural gas production will increase by about 40% by 2040 from its current level of 27.4 trillion cubic feet (tcf), mainly because of expected increases in shale gas production over the next two decades. Shale gas is projected to account for more than 50% of total U.S. natural gas production by 2040.

The shale boom has moved natural gas to center stage in energy policy debates. The potential for such a large supply of natural gas has generated interest in converting current regasification plants to liquefaction plants or even building new liquefaction plants to allow them to export liquefied natural gas (LNG) to international markets. NERA Economic Consulting (NERA), at the request of the U.S. Department of Energy, Office of Fossil Energy (DOE), conducted an objective and independent study (NERA Study) to assess the potential macroeconomic impacts on the U.S. economy of LNG exports.

This article summarizes the NERA Study by providing a brief overview of the study objectives, framework for the analyses, and some key findings.

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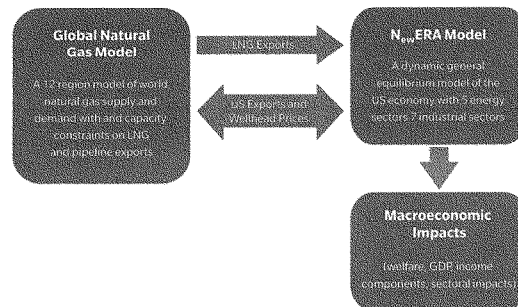
## NERA Study Objective

The primary objective of the NERA Study was to evaluate the macroeconomic impacts of different levels of LNG exports based on a study conducted by the U.S. EIA.<sup>5</sup> We addressed the same set of 16 scenarios for LNG exports analyzed by EIA. These scenarios incorporated different assumptions about the U.S. natural gas supply and demand outlook and LNG export levels. Our U.S. natural gas outlook included a Business As Usual (BAU) baseline that is consistent with the Reference case of the AEO 2011; a High shale estimated ultimate recovery (EUR); and a Low EUR case based on AEO 2011. We also simulated macroeconomic impacts of other feasible LNG export scenarios by characterizing different international gas market conditions.

## Study Approach

To conduct this study, we used our forward-looking dynamic computable general equilibrium model ( $N_{\text{en}}$ ERA model) of the U.S. economy. The  $N_{\text{en}}$ ERA model can be used to analyze impacts of command and control regulations, market-based policies, and trade policies such as LNG export policies on regional economies and economic sectors. Different types of policies could impact a sector in a variety of ways. When evaluating policies that have impacts on the entire economy (such as LNG exports) that cause changes in export revenues as well as changes in the natural gas market, one needs to use economic tools that capture the effects as they ripple through all sectors of the economy and take into account the associated feedback effects. The  $N_{\text{en}}$ ERA modeling framework takes into account interactions among all parts of the U.S. economy as well as changes in terms of trade and export revenues. The  $N_{\text{en}}$ ERA model is based on a unique set of databases constructed by combining economic data from the IMPLAN 2008 database and energy data from EIA's AEO 2011.

Figure 1: Linkages between the Global Natural Gas Model and the  $N_{\text{en}}$ ERA model



The  $N_{w,ERA}$  model is linked to NERA's Global Natural Gas Model (GNGM) through LNG export volumes and net-back prices. GNGM is a partial-equilibrium model designed to estimate the amount of natural gas production, consumption, and trade by major world natural gas consuming and/or producing regions. The model includes 12 regions that are largely adapted from the EIA International Energy Outlook (IEO) regional definitions, with some modifications to address the LNG-intensive regions. The model's international natural gas consumption and production projections for these regions are calibrated to the EIA's AEO and IEO 2011 Reference cases. The model maximizes the sum of consumers' and producers' surplus less transportation costs, subject to mass balancing constraints and regasification, liquefaction, and pipeline capacity constraints.

The GNGM is able to estimate the levels of LNG exports and net-back prices to the U.S. under different international markets dynamics. These outputs are exogenously linked to the macroeconomic model which projects the macroeconomic impacts on the economy. Figure 1 shows the linkages between the two models.

### Major Findings of the Macroeconomic Study

We found that the U.S. would only be able to market LNG successfully with higher global demand or lower U.S. costs of production than in the Reference cases. The market limits how high U.S. natural gas prices can rise under pressure of LNG exports because importers will not purchase U.S. LNG exports if the U.S. wellhead price plus processing and transport costs rises above the cost of competing supplies.

#### Macroeconomic impacts of LNG exports are positive in all cases

There were net economic benefits to the U.S. economy across all the scenarios that we examined in which the global market would take LNG exports from the U.S. Moreover, for every one of the market scenarios examined, net economic benefits increased as the level of LNG exports increased. In particular, scenarios with unlimited exports always had higher net economic benefits than corresponding cases with limited exports. There was no "sweet spot," and no point where any "balance" was required to gain the greatest benefits.

In all of these cases, benefits that come from export expansion would more than outweigh the costs of faster increases in natural gas production and slower growth in natural gas demand, so that LNG exports have net economic benefits in spite of higher domestic natural gas prices. This is exactly the outcome that economic theory describes when barriers to trade are removed. Net benefits to the U.S. would be highest if the U.S. becomes able to produce large quantities of natural gas from shale at low cost, if world demand for natural gas increases rapidly, and if LNG supplies from other regions are limited. If the promise of shale gas is not fulfilled and costs of producing natural gas in the U.S. rise substantially, or if there are ample supplies of LNG from other regions to satisfy world demand, the U.S. would not export LNG. Under these conditions, allowing exports of LNG would cause no change in natural gas prices and do no harm to the overall economy.

There should be nothing surprising about the conclusion that the U.S. economy is better off with unrestricted trade in natural gas than with any restrictions because basic international trade economics principles makes this inescapable. This same conclusion is reached by other researchers have deep knowledge of the natural gas markets, despite many differences in details of the level of exports and price impacts.<sup>8</sup>

**Impacts on the U.S. natural gas prices are moderate and will not rise to the Asian market prices**

U.S. natural gas prices increase when the U.S. exports LNG. But the global market limits how high U.S. natural gas prices can rise under pressure of LNG exports because importers will not purchase U.S. exports if delivered prices from the U.S. rise above the cost of competing supplies. In particular, the U.S. natural gas price does not become linked to oil prices in any of the cases examined.

Natural gas price changes attributable to LNG exports remain in a relatively narrow range across the entire range of scenarios. Natural gas price increases at the time LNG exports could begin range from zero to \$0.33 (2010\$/Mcf). The largest price increases that would be observed after 5 more years of potentially growing exports could range from \$0.22 to \$1.11 (2010\$/Mcf). The higher end of the range is reached only under conditions of ample U.S. supplies and low domestic natural gas prices, with smaller price increases when U.S. supplies are more costly and domestic prices higher.

In addition, U.S. natural gas prices will not rise to levels seen in the Asian markets, or even to the net-back price based on current Asian market prices. Our analyses show that there will always be a difference of \$6 to \$8 between the Asian prices and the U.S. prices, since that represents the cost of inland transportation, liquefying, shipping, and regasifying natural gas to get it from the U.S. to Japan or Korea. Even with no binding export limits, the U.S. natural gas price will still be below the import price in the Asian markets since Asian buyers have no incentive to buy natural gas in the U.S. if it is not cheaper than their prevailing domestic price by that amount.

**Serious competitive impacts are likely to be confined to narrow segments of industry**

Economists who analyze how changes in energy costs affect energy-intensive, trade-exposed industries have reached a consensus that only narrowly-defined segments of manufacturing are at risk from higher energy costs. These sectors have relatively small employment and value added compared to manufacturing as a whole, so that even large impacts on these narrow segments translate into negligible impacts on manufacturing and the overall U.S. economy. The only chemical sector that is held out as evidence of widespread harm from higher natural gas prices is the nitrogenous fertilizer industry, which employs an insignificant amount of labor. This subsector of chemicals is not typical of the chemicals sector as a whole; it is a unique outlier based on turning cheap natural gas into cheap fertilizer with low profit margins and little significance for the overall economy. Our analysis suggests that future output in these sectors would fall short of baseline levels by less than 1%.

Thus, the rationalizations offered for prohibiting or limiting LNG exports – that overall energy prices will increase or that certain narrow sectors need to be protected – do not stand up to economic analysis. Consistent with basic free trade principles, the range of aggregate macroeconomic results from this study suggests that LNG exports have net benefits to the U.S. economy as a whole and that trade restrictions would harm both the U.S. economy and its trading partners.

## Notes

<sup>1</sup> This article is based on the study: W. David Montgomery, Robert Baron, Paul Bernstein, Sugandha D Tuladhar, Shirley Xiong, and Mei Yuan, "Macroeconomic Impacts of LNG Exports from the United States," NERA Economic Consulting, Washington DC, December 3, 2012. [http://www.fossil.energy.gov/programs/gasregulation/reports/nera\\_lng\\_report.pdf](http://www.fossil.energy.gov/programs/gasregulation/reports/nera_lng_report.pdf)

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<sup>4</sup> IHS Global Insight (2011): The Economic and Employment Contributions of Shale Gas in the United States prepared for America's Natural Gas Alliance, December 2011.

<sup>5</sup> Effect of Increased Natural Gas Exports on Domestic Energy Markets, U.S. Energy Information Administration, January 2012. [http://www.eia.gov/analysis/requests/fe/pdf/fe\\_lng.pdf](http://www.eia.gov/analysis/requests/fe/pdf/fe_lng.pdf)

<sup>6</sup> Charles Ebinger, Kevin Passy, and Govinda Avasaral "Liquid Markets: Assessing the Case for U.S. Exports of Liquefied Natural Gas," Energy Security Initiative at Brookings, The Brookings Institute, May 2012, Policy Brief 12-01.

Kenneth B. Medlock III, PH.D., "U.S. LNG Exports: Truth and Consequence," James A. Baker III Institute for Public Policy, Rice University, August 10, 2012.

[The second study, titled “Updated Macroeconomic Impacts of LNG Exports from the United States” can be found at <http://www.nera.com/publications/archive/2014/updated-macroeconomic-impacts-of-lng-exports-from-the-united-sta.html>.]

And, also, I would just note and make part of the record significant bipartisan support for LNG exports. That includes an Obama Administration review and its conclusions regarding its benefits. That includes political support from Democrats like House Minority Whip Steny Hoyer. And that certainly includes labor union support from Laborers International Union, AFL–CIO, United Association of Plumbers, Fitters, and HVAC Techs, the Building Trades Council, and Insulators and Allied Workers Local Union 24. We will submit that for the record.

[The information follows:]



## The 2015 Economic Report of the President

February 19, 2015 at 6:00 AM ET by Jason Furman, Maurice Obstfeld, and Betsey Stevenson

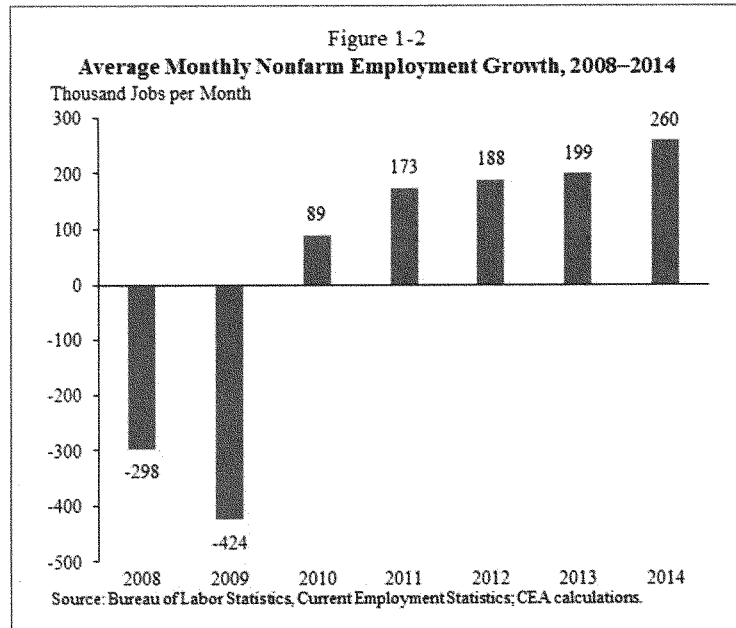
### Summary:

The Council of Economic Advisers released the 69th-annual Economic Report of the President, which reviews the United States' accelerating recovery and explores fundamental economic issues impacting middle-class families.

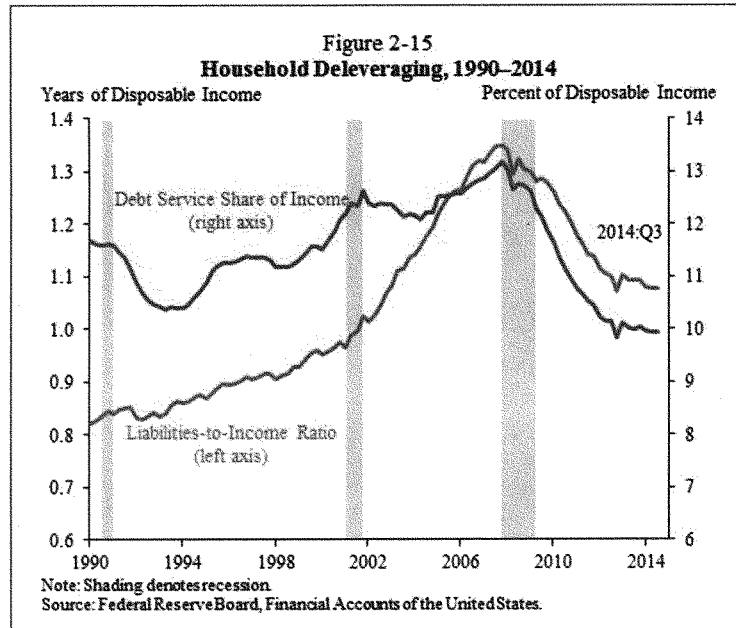
This morning, the Council of Economic Advisers released the 69th-annual *Economic Report of the President*, which reviews the United States' accelerating recovery and ways to further support middle-class families as the recovery continues. The economy is recovering from the Great Recession at an increasing pace, growing at an annual rate of 2.8 percent over the past two years, compared with 2.1 percent over the first three-and-a-half years of the recovery. The speed-up is especially clear in the labor market, where job gains have reached a pace not seen since the 1990s. But it is essential that a broad range of households benefit from the United States' resurgent growth, so this year's *Report* focuses on factors that are important to middle-class incomes: productivity, labor force participation, and income inequality. The President's approach to economic policies, what he calls "middle-class economics," aims to improve each of these long-standing elements and ensure that Americans of all income levels share in the accelerating recovery.

Below are some highlights from each of the seven chapters in this year's *Report*:

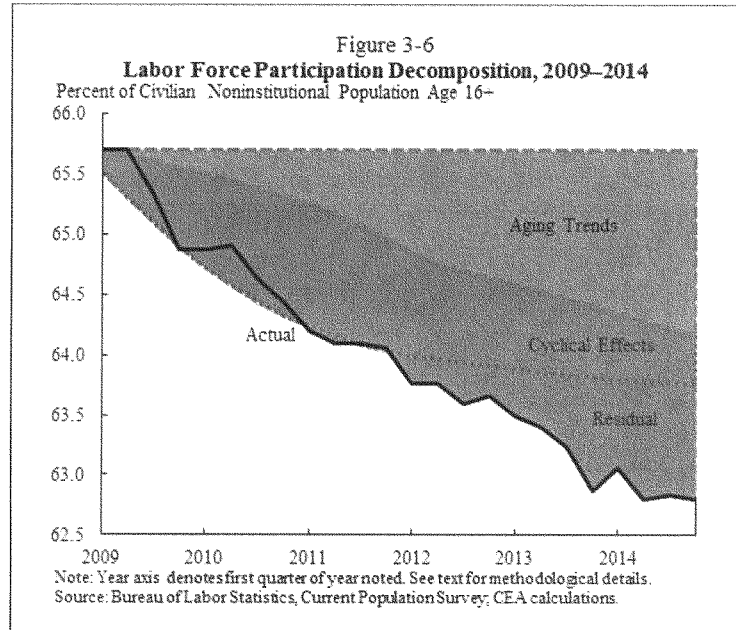
**Chapter 1 reviews the progress of the recovery and explores the long-term factors that drive middle-class incomes.** The U.S. recovery has accelerated in terms of both output and employment, with job growth rising 30 percent faster in 2014 than in 2013 (Figure 1-2). Indeed, the unemployment rate has fallen to levels that, as recently as 2013, were not expected until after 2017. These labor market improvements have begun to translate into wage gains for middle-class workers, but nevertheless, this recent progress cannot make up for decades of sub-par middle-class income growth. The chapter provides historical and international context for middle-class income growth and the three key factors that influence it: productivity growth, changes in labor force participation, and income inequality. The increasing strength of our current recovery provides an opportunity to address these long-standing challenges, and the President supports a wide range of policies, detailed in this *Report*, that will strengthen all three key factors.



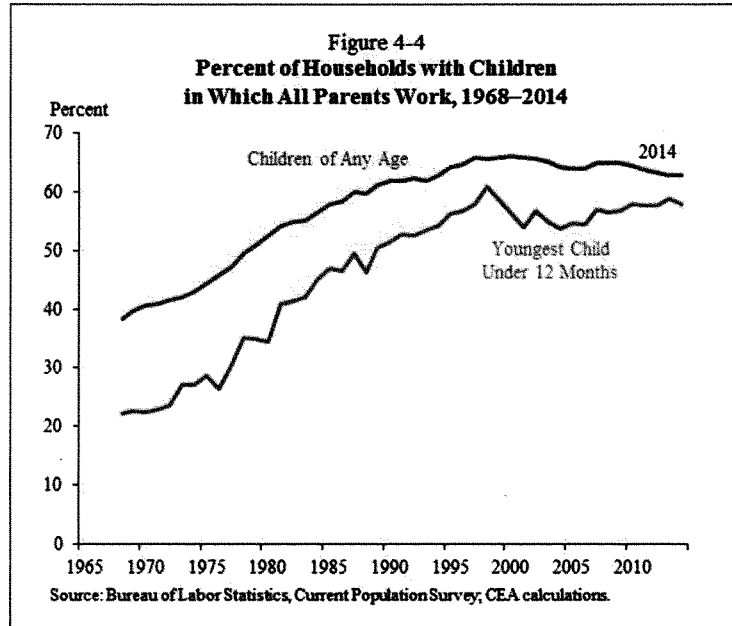
Chapter 2 reviews the macroeconomic performance of the U.S. economy during 2014, including the growth of output and employment, the continued decline in the unemployment rate, the healing of the housing market, and the improvement in the budget deficit as a share of GDP. By most measures, the pace of output growth has risen relative to the beginning of the recovery. Gross domestic product grew 0.7 percentage point faster per year over 2013 and 2014 than over the first three-and-one-half years of the recovery. Meanwhile, U.S. households continued to pay down their debts. Figure 2-15 shows the dramatic rise in the household sector's liabilities-to-income and debt-service ratios in the run-up to the financial crisis, along with the reduction in these ratios that followed. By the third quarter of 2014, required payments on mortgage and consumer debt had fallen to 9.9 percent of disposable income, nearly the lowest level on record. The chapter explores this and other macroeconomic developments, including the slowdown in global growth, which could pose some downside risk to U.S. economic growth in the future. The chapter also reviews the assumptions about future growth that underlie the President's Fiscal Year 2016 Budget, including the economic benefits of the President's agenda. The chapter explores the benefits of immigration reform, infrastructure investment, and business tax reform, among other pro-growth policies that the President supports.



Chapter 3 addresses the opportunities and challenges facing the U.S. labor market. The sharp drop in unemployment in 2014 came amid a stabilization in the labor force participation rate and the strongest annual job growth since the 1990s as businesses added more than 3 million jobs. But economic performance must be gauged by more than just the unemployment rate — a successful job market also encourages labor force participation, supports quality jobs, and facilitates effective job matching of workers and positions. This chapter reviews the United States' recent labor market progress and discusses five long-standing labor market challenges that motivate many of President Obama's policy initiatives. The decline in the labor force participation rate earlier in this recovery is one such important challenge. Just over half the participation decline has been driven by an aging population as the "baby boomer" generation has begun to retire (Figure 3-6). Moreover, labor force participation has stabilized over the past year, indicating that the 2014 unemployment decline reflected strong job growth rather than a shrinking labor force.



**Chapter 4 discusses how American family lives have changed over the last half-century and the implications of these changes for our labor market.** Women now represent almost one-half of the workforce, married couples increasingly share child-care responsibilities, and people live — and work — longer than in the past. Today, all parents are working in more than 6 out of every 10 households with children, up from 4 out of 10 in 1968 (Figure 4-4). Chapter 4 considers some of the crucial changes that are needed to help Americans better balance their work and caregiving responsibilities. While many workers have limited access to family-friendly workplace policies such as paid sick and family leave, recent state and local policies have expanded access to these benefits. The chapter examines workplace flexibility policies — a range of policies that enable workers to adjust aspects of work as needed. It also discusses the economic evidence for paid leave and workplace flexibility policies that the President has proposed, showing how these policies can increase worker productivity, retention, and morale. This evidence demonstrates that family-friendly policies can benefit workers, businesses, and the economy.

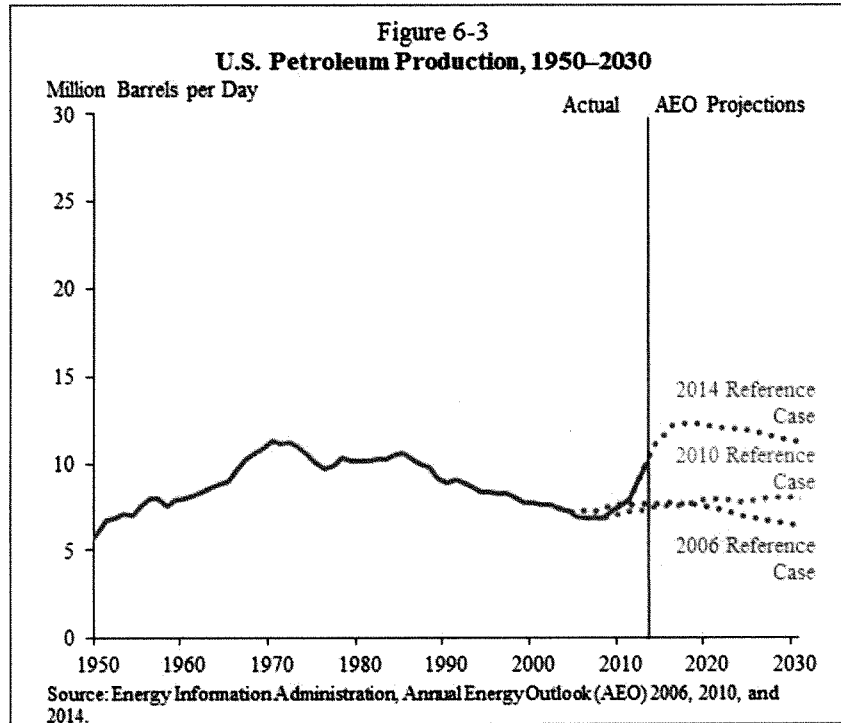


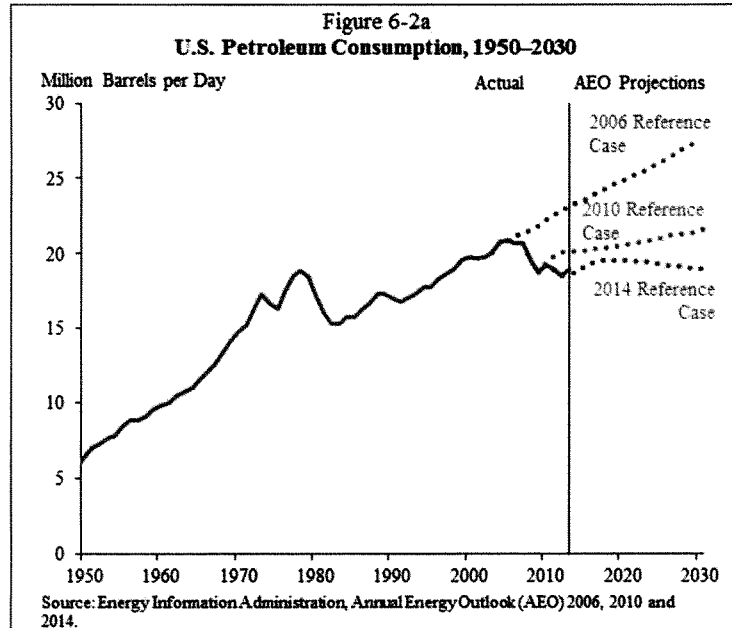
**Chapter 5 shifts the focus to productivity growth with an examination of business tax reform as well as a briefer discussion about the complementary issues in individual taxation.** In 2014, the top statutory corporate tax rate in the United States was roughly 10 percentage points above the OECD average. At the same time, the U.S. tax code is riddled with loopholes that benefit certain companies without justification. For example, the tax code gives U.S. corporations the ability to reduce dramatically their tax bills by locating subsidiaries in small, low-tax countries. This pattern is evident in the outsized amounts of foreign corporate profits reported in many of these countries (Table 5-1). The President's approach would close loopholes in the tax code while making it more attractive for companies to locate and invest in the United States. The chapter describes this and other components of the President's approach to reform, documenting four channels through which reform can boost productivity and living standards: encouraging domestic investment, improving the quality of investment, reducing the inefficiencies of the international tax system, and facilitating investments in infrastructure.

Table 5-1 <b>U.S. Controlled Foreign Corporation Profits Relative to GDP, 2010</b>	
Country	Foreign Corporation Profits Relative to GDP (%)
Bahamas	104
Bermuda	1,578
British Virgin Islands	1,009
Cayman Islands	1,430
Cyprus	13
Ireland	38
Luxembourg	103
Netherlands	15
Netherlands Antilles	25

Source: IRS Statistics of Income; United Nations; CEA calculations.

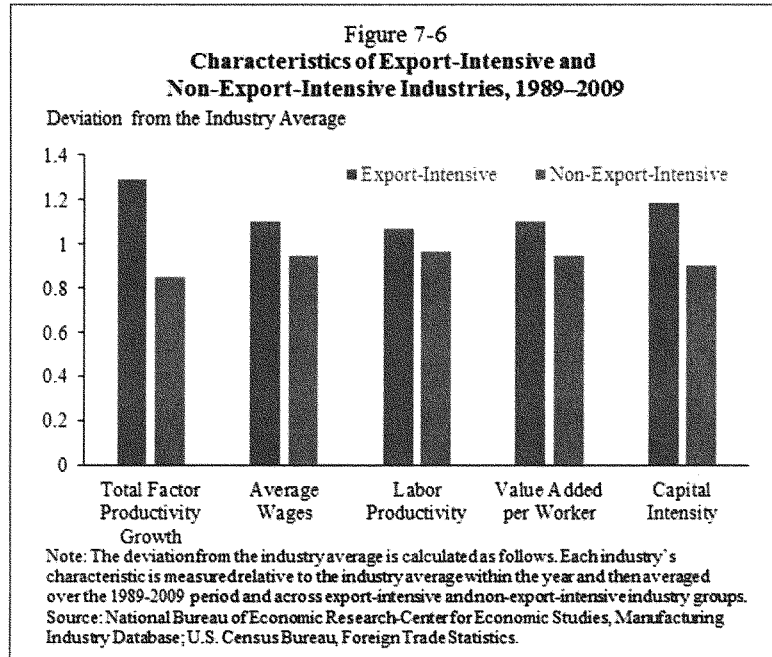
**Chapter 6 reviews the profound transformation of the U.S. energy sector.** The United States is producing more oil and natural gas and generating more electricity from renewables such as wind and solar. While the dramatic increase in U.S. oil production is widely recognized (Figure 6-3), a less well known but also critical trend is the decrease in U.S. oil consumption (Figure 6-2a), which reflects rising fuel efficiency among other factors. To build on this progress, to foster economic growth, and to ensure a sustainable low-carbon economy for future generations, the President has set out an aggressive all-of-the-above energy strategy. This chapter lays out the key elements of the strategy that will enhance U.S. energy security and limit greenhouse gas emissions in ways that also support economic growth and job creation. In recent years, expanded production of oil, natural gas, and renewables has raised employment in those industries during a period of labor-market slack. At the same time, technological innovation and greater production have helped to reduce energy prices, to the benefit of energy-consuming businesses and households. These developments have contributed broadly to employment and GDP growth, and will continue to do so.





Finally, Chapter 7 situates the United States in the context of the global economy. The United States is more integrated with the rest of the world than ever before. This chapter examines the substantial potential benefits of greater U.S. integration with the global economy, through both international trade in goods and services and financial transactions in international capital markets. It presents empirical evidence on the economic effects of enhanced U.S. trade and free trade agreements, as well as on ongoing trends such as the nation's growing surplus in services trade. U.S. businesses that expand in response to the increased foreign market access provided by U.S. free trade agreements support American jobs, strengthening the middle class in several ways. As Figure 7-6 shows, on average over the 1990s and 2000s, export-intensive industries report 17 percent higher average wages than non-export-intensive industries, similar to what has been found in other studies. Exporting industries also tend to be more productive and to rely more on capital and skilled workers. In addition to bringing down our trading partners' tariff and non-tariff barriers closer to the low levels the United States already has, President Obama's "values-driven" trade policy seeks to do what's best for the American middle class by enforcing international trade agreements that improve labor and environmental standards around the world, combat corruption, and strengthen the rule of law abroad. These agreements therefore allow American firms and American workers to compete on a level playing field in the global economy.





*Jason Furman is the Chairman of the Council of Economic Advisers. Maurice Obstfeld and Betsey Stevenson are members of the Council.*

## THE WALL STREET JOURNAL.

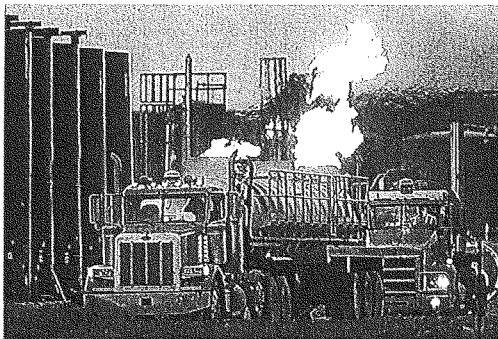
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<http://www.wsj.com/articles/democrats-increasingly-backing-oil-and-gas-industry-1407790617>

POLITICS

# Democrats Increasingly Backing Oil and Gas Industry

Lawmakers in the Party Weigh Benefits of Fracking Boom Against Opposition from Environmentalists



Natural gas is flared off at an energy production facility in June in Williston, N.D. ASSOCIATED PRESS

By AMY HARDER

Aug. 11, 2014 4:56 p.m. ET

When House Republicans took up a measure to speed the government's reviews of applications to export natural gas, a move long sought by energy companies, the unexpected happened: The bill won "yes" votes from 47 Democrats.

The bill's sponsor, Rep. Cory Gardner (R., Colo.), anticipated some Democratic backing, but not that much. Rep. Steve Israel of New York, who leads the Democrats' House campaign arm, was a yes, as was House Minority Whip Steny Hoyer of Maryland. Both voted in 2012 to restrict oil and gas exports.

The energy boom is shaping a new kind of Democrat in national politics, lawmakers who are giving greater support to the oil and gas industry even at the risk of alienating environmental groups, a core of the party's base. The trend comes as oil-and-gas production moves beyond America's traditionally energy-rich states, a development that also is increasing U.S. geopolitical influence abroad.

★ ★ ★ ★ ★ CAPITAL JOURNAL ★ ★ ★ ★ ★

"It's a huge business opportunity for the country," said Rep. John Delaney (D., Md.), who was among 17 first-term

lawmakers who voted yes on Mr. Gardner's bill. It passed the House and now awaits action in the Senate.

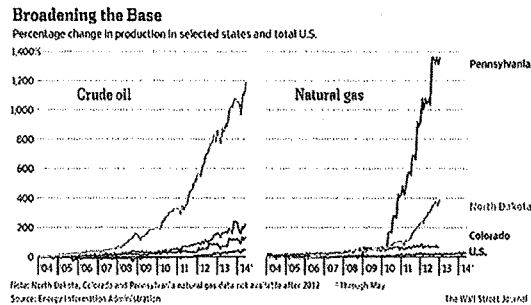
Mr. Delaney, whose district extends from the Washington-area suburbs to the West Virginia border, opposes a moratorium Maryland has placed on fracking. "I think that has really hurt the western part of my district."

"When four or five states were responsible for the vast majority of oil and gas production, it was easy to say this is a Republican issue, because most of those states happened to be Republican states," said Kevin Book, managing director at the Washington, D.C.-based consulting firm ClearView Energy Partners. "But now that oil and gas production is spreading through unconventional technologies, there's many more states."

It is a theme playing out ahead of November's midterm elections, with some Democrats trying to balance environmental groups' concerns about climate change and an industry they see as carrying economic benefits.

This tension recently flared in Colorado, where Democrats have been at odds over measures restricting fracking, a process that has unlocked vast supplies of oil and natural gas from rocks deep underground.

In response to concerns about potential groundwater pollution and drilling close to homes, Rep. Jared Polis, a liberal Democrat, had been pushing for a ballot initiative to limit fracking. His move drew opposition from Gov. John Hickenlooper and Sen. Mark Udall, Democrats in tight re-election races in Colorado. Party leaders feared the measures would allow the GOP to cast Democrats as anti-industry. Mr. Polis retreated last week after the governor agreed to set up a commission to address the issue.



Some Republicans are skeptical of the Democratic Party's growing support and note many Democrats want more regulations. At the same time, GOP leaders say the phenomenon has moved beyond rhetoric. Rep. Kevin

McCarthy (R., Calif.), the new House Majority Leader, said in a recent interview he has noticed Democrats being more supportive of the energy boom, "because they see their economy grow by it."

#### WSJ Radio

Amy Harder gives more insight to WSJ This Morning's Gordon Deal.

00:00 |  
06:17

Mike McKenna, president of conservative lobbying firm MWR Strategies, which has close ties to GOP congressional leadership, said "it's a genuine shift and an important one." Among the drivers, he said, is the local tax revenue that comes from related

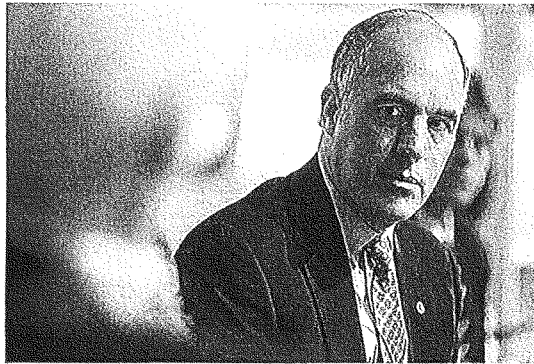
economic growth.

Since March 2008, oil production has increased 58% and natural-gas output has risen 21%, making the U.S. the world's largest producer of both fuels, according to federal and international agency statistics. Jobs directly related to oil and gas production have nearly doubled in the past 10 years to 697,600, government data shows.

Support is strongest in states that reap the most from new production and the development export terminals for liquefied natural gas in places like Maryland and Oregon. Fracking is poised to start or already has in swing states including Ohio, North Carolina and Nevada.

Energy trade groups have taken notice. The American Petroleum Institute, the industry's main lobby group, hired Louis Finkel, a former Democratic congressional adviser, as its No. 2 executive in May. America's Natural Gas

Alliance hired Marty Durbin, a former Democratic aide and nephew to Senate Majority Whip Dick Durbin (D., Ill.), as its chief executive in March 2013.



Sen. Bob Casey (D, Pa.) BLOOMBERG NEWS

Democrats in new oil and gas states, including Sens. Bob Casey of Pennsylvania and Heidi Heitkamp of North Dakota, are bullish on the boom, while supporting regulations that they portray as robust but not onerous, to safeguard water supplies and reduce air pollution.

In Pennsylvania, where natural-gas production has increased 17-fold since 2008, Mr. Casey has become more vocal recently about the economic benefits. A few years ago, he was pushing for legislation to require disclosure of the chemicals used in fracking. That is no longer a top focus. In congressional testimony this year, he talked up the importance of fracking to his state's manufacturing sector.

The environmental influence in the Democratic Party remains strong. One of the party's newest big-money donors is Tom Steyer, a former hedge-fund manager who is committing millions to support lawmakers who want to take action on climate change.

Bill McKibben, founder of 350.org, a group that helped rally opposition to the Keystone XL pipeline, say Democrats are talking more about the need to address climate change but that the talk isn't translating into action.

"I think many of them are either bought off by fossil-fuel donations or don't understand the science and so imagine they can have it all ways," Mr. McKibben said. Environmentalists are organizing what they are billing as the biggest climate-change march in history, scheduled for Sept. 21 in New York.

Sen. Sheldon Whitehouse (D., R.I.), who has given more than 70 floor speeches urging action on climate change since April 2012, said he wants stricter regulations on methane, a greenhouse gas that can be emitted during the

production and transmission of natural gas. But even he praises the boom's economic benefits. "I'm willing to defer cracking down on natural gas, because the economic benefits to the nation have been so great," he said in an interview.

In Colorado, where oil production has more than doubled since 2008, Mr. Udall has raised nearly \$250,000 this election season from oil and gas companies. He also boasts a 97% lifetime voting record from the League of Conservation Voters. "Energy jobs are an important part of our economic growth in Colorado in the last six years," said Mr. Udall, who is also pushing alongside his challenger, Mr. Gardner, to expand natural-gas exports.

Kelly Giddens, campaign manager for the Citizens for a Healthy Fort Collins, a Colorado-based environmental group, doesn't like Mr. Udall's push for natural-gas exports but also doesn't want a Republican to take his seat. As for voting for Mr. Udall this November, she said, "It's going to be a giant hold-your-nose-and-vote thing. But I will."

**Write to Amy Harder at [amy.harder@wsj.com](mailto:amy.harder@wsj.com)**

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## **CLNG (Center for Liquefied Natural Gas)**

### **In the News**

## **What They're Saying: Labor Groups Support LNG Exports**

May 5, 2014

Exporting American liquefied natural gas (LNG) is one of the most promising economic opportunities of the shale revolution. LNG exports will help reduce our trade deficit, increase government tax revenues, grow the economy, and support millions of U.S. jobs in engineering, manufacturing, construction and facility operations. In an effort to deliver these benefits to the American people, Congressmen from both sides of the aisle have introduced legislation to speed up the approval process for LNG export applications trapped in bureaucratic delays at the Department of Energy. As legislation advances through Congress, it's important to note that the chorus of support for LNG exports is not unique to lawmakers. Major Labor groups have also expressed their support for exports because LNG export projects will create jobs across the entire value chain of inputs necessary to construct and operate these facilities, translating into approximately \$1 billion in new wages for U.S. workers over just a six year period.

Here is what some of the nation's most prominent labor groups are saying:

**Laborers International Union of North America, David Mallino Jr., Director, Legislative Department** ([April 25, 2013](#))

"The export of LNG can help drive additional U.S. natural gas production and support hundreds of thousands of additional U.S. jobs in engineering, manufacturing, construction, and operation of the export infrastructure, as well as others indirectly along the equipment supply chain."

**AFL-CIO, Richard Trumka, President** ([Feb. 4, 2013](#))

"All facets of it ought to be up on the table and ought to be talked about. If we have the ability to export natural gas without increasing the price or disadvantaging American industry in the process, then we should carefully consider that and adopt policies to allow it to happen and help, because God only knows we do need help with our trade balance."

**The United Association of Plumbers, Fitters and HVAC Techs, Brad Karbowsky, International Representative** ([Jan. 24, 2013](#))

"LNG terminals are multi-billion dollar investments that require a highly trained and skilled workforce to build. LNG facility construction will employ thousands of my brothers and sisters in the labor movement for many years to come as well as provide opportunities for new

apprentices. The billions of dollars in wages generated by these well-paying jobs will be multiplied throughout communities across the country in the form of investment and taxes, which will in turn be used to support schools, fire stations and other essential public services. This new source of shared prosperity will provide a foundation for future growth.”

**Washington, D.C. Building Trades Council**, Vance Ayros, Executive Secretary Treasurer (Oct. 9, 2012)

“The reality of the situation is it’s going to create thousands of construction jobs. And we were talking earlier about permanent jobs. There’s a lot more permanent jobs that we’ll just be creating that’s planning along with this process once it’s done.”

**Insulators and Allied Workers Local 24 Labor Union**, Lino Cressotti, Business Manager (Oct. 9, 2012)

“The State of Maryland income and sales tax will approach 60 million over the life of the project. Approximately 2700, peaking out at 3400 construction jobs of employment in Calvert County with this project. These jobs will be filled by skilled craft labor. The project will be integrated in the union apprenticeship programs. With a job of this size we can project anywhere from 500 to 1000 brand new apprentices. And in the building trades these aren’t jobs; these are careers.”



Okay. Senator Fischer.

Senator FISCHER. Thank you, Mr. Chairman.

I would like to thank all the panel members for being here today. I appreciate your input on this.

Mr. Mack, as you probably know, Nebraska is very unique. We are a 100 percent public power state, and as we look at the clean power plan that is out there, we will be hit especially hard. Nebraska utilities are going to face reliability issues and small businesses are going to see price increases in their electricity bill. Can you explain what impact the increases in electricity rates would have on energy intensive small business operations like manufacturing and agriculture, which are both very, very important to my home state of Nebraska.

Mr. MACK. Thank you, Senator. The increase in the cost of electricity that may be experienced because of a number of different factors, I think, have to be put in context with the dramatic decreases we have seen in electric power generation costs over the last several years because of the remarkable abundance of natural gas, particularly. If we look back five or six years, natural gas was about, I think, \$8 or \$9 per million BTU. Today, it is about \$2.75.

And, so, to the extent that power generation is converted to natural gas-fired appliance you are going to see a significant benefit to the ratepayers, not just in Nebraska, but to everywhere. So, I think the shale revolution and the abundance that it has created has had a tremendously beneficial impact to companies that depend, companies and people who depend on cheap electricity.

Senator FISCHER. As you look at the clean power plan, however—are you familiar with that?

Mr. MACK. Somewhat. Not in great detail, but—

Senator FISCHER. And as we look at those proposed regulations, the impact they have, and as I said, especially on a state like Nebraska, where we have 100 percent public power, we have two-thirds of our electricity supplied by coal-fired electric plants, coal from our neighbors in Wyoming, and to retrofit those plants, it is going to be a cost, and it will be a cost to the owners of those plants who are the citizens of Nebraska. We are a public power state. We are going to see costs to businesses in the products that they produce and the services that they provide. That is going to be passed along to consumers, as well. And then when you go home and you turn on your light switch and you pay your electric bill in Nebraska, you are going to be hit again.

What is the impact of that on families, when we have regulations like that? What is the impact, and what kind of decisions do you think we ought to be looking at when we make—when we consider changes in policy?

Mr. MACK. Well, clearly, anything that raises costs of electricity to the consumer are not a good thing for either the consumer or business or the economy. So, I fully agree that if you are in the mode that you are dependent on coal, and we certainly think coal is an excellent and plentiful and affordable fuel, that that is going to—that is certainly going to have an impact on your state and your citizens. So, I certainly sympathize with that and I—you know, it is outside of our scope to advocate for some of those policies or against some of those policies, but we certainly think that

any policies that increase the availability of all forms of energy are going to ultimately have a favorable impact on all citizens, all countries—all states, rather, and all companies.

Senator FISCHER. Thank you, Mr. Mack. Thank you, Mr. Chairman.

Chairman VITTER. Thank you.

I have been reserving my time. I am going to go ahead and use it now, if that is okay with members, in part because Dr. Aspinwall is going to have to leave for the airport before too long and I wanted to get a chance to ask him a couple things.

Doctor, you see this booming part of our economy back home and you see the enormous need it has created for skills training in certain areas. You highlighted in your testimony the fact that present federal law and federal policy, for instance, regarding Pell Grants actually cuts off access to tuition support to a lot of the most efficient and most productive training programs on the ground now because the programs are too short. I mean, essentially, they are too efficient. They give people really good skills that lead directly to a great job. They just do not take long enough for federal bureaucrats' liking.

Can you expand on that? And, I assume that means you would encourage us to re-look at those Pell Grant and other related requirements.

Dr. ASPINWALL. Yes. Thank you, Senator. I go back to some of my written testimony. Many of the programs that we develop, industry have, I would say, requested, that they have demanded these. We are having such a strong expansion in such a short period of time that we are having trouble supplying the workforce, and the reason we are having trouble supplying the workforce is we are trying to put them through our standard diploma or degree programs that are set up for at least one year to two years.

So, what they have requested us to do is condense those programs and only use the competencies that they know they need when they get on the job. But, when we do this, by being so efficient and effective, then the federal guidelines from the Department of Education do not allow for the use of federal aid because they are not the correct number of seat hours or contact hours and they do not meet a certain length as far as weeks and guidelines.

So that—many of our students, as I said before, they work, so if they are working—and 84 percent of community college students work—they cannot quit their jobs and come out and take advantage of those. So, we still rely on private businesses and private industries to provide scholarships, but that is not the long-term solution, because after a while, the private industries and private business, we are all going to them asking for money and those scholarships run out.

Chairman VITTER. Right.

Dr. ASPINWALL. So—and again, as I said, some of these programs, for instance, the welders, they can go through a 450-hour program and start out at basically the lowest \$26 per hour. And before this energy expansion, our welders were making \$10, \$11, \$12 an hour. So, the more the need, the acute the need gets, the higher the workforce rate gets and the higher wages that these companies pay.

Chairman VITTER. Right. And, just to be clear, the jobs that are associated with these accelerated focus programs, they are not at the lower end of the spectrum. I mean, they are very good paying and good benefit jobs, correct?

Dr. ASPINWALL. Absolutely.

Chairman VITTER. Can you give us some flavor for what we are talking about?

Dr. ASPINWALL. Absolutely. Two of the highest demand jobs are process technology and industrial instrumentation, and as I said briefly in my written statements, we had to create a program that puts students through an Associate of Applied Science in just 16 weeks. That is how much we condensed that, a two-year program down to 16 weeks. That is an eight-hour-a-day program, but those individuals who go through that, they leave that program at a minimum salary of around \$85,000 a year. That is a pretty good return on your investment for around \$6,000 for training.

Chairman VITTER. Sure. Absolutely. Okay.

Mr. Slocum, a lot of your testimony is about the price of energy related to, say, LNG exports and other export opportunities. As I said a minute ago, I disagree with claims that we are talking about huge, 50 percent, etc., or even double-digit increases, and there are a lot of studies that go to that point. But more broadly, would Public Citizen support the same sort of rule you enunciated for other American produced goods or stock? In other words, if banning exports decreases the price to the American consumer, should we ban those exports, because surely you can make an argument that that would be the case in a wide variety of things, starting with, say, food.

Mr. SLOCUM. Right. Very good question, Mr. Chairman. I think that the unique history and role of energy commodities—the 1975 Energy Policy and Conservation Act was passed in direct response to acute physical shortages of energy commodities, particularly petroleum products, that resulted in punishing price increases that threw this country into very bad economic times. And, so, I think that there is merit for the unique nature of certain energy commodities. The inherent volatility of—

Chairman VITTER. Can I ask you—I do not want to cut you off—

Mr. SLOCUM. Yes, sir.

Chairman VITTER [continuing]. But my time is running out. Surely, you would agree that our understanding of American energy resources has been turned upside down since 1975.

Mr. SLOCUM. It has been, and it has been turned upside down from just a few years ago.

Chairman VITTER. Right.

Mr. SLOCUM. I mentioned in my written testimony—

Chairman VITTER. So—

Mr. SLOCUM. Yes, sir.

Chairman VITTER [continuing]. What I am suggesting is, surely, the premise that Congress used in 1975, I mean, that has completely changed, right? That is out the window.

Mr. SLOCUM. For now, but there are a number of variables that could happen that we cannot predict, disruptions in supply and demand across the globe, disruptions here in the United States. That

is the thing about commodities, and particularly with energy commodities. There is no economist that will be able to credibly safely predict what the price of a given commodity is going to be in the future because of all of these unknown variables that go into affecting the price.

Chairman VITTER. Sort of like corn, maybe?

Mr. SLOCUM. I am an energy policy guy. I do not know as much about agricultural markets—

Chairman VITTER. Should we ban those exports?

Mr. SLOCUM. If there is a Congressional or data-driven determination that there are acute agricultural shortages that threaten the American consumer and the American farmer, then I do think we should contemplate that, but it is not my understanding that that is the scenario today.

Chairman VITTER. Okay, well, it is not my understanding that is the scenario with energy, thanks to abundant American energy, either, but I understand.

Senator Coons.

Senator COONS. Thank you, Chairman Vitter. Thank you for convening this hearing.

And thank you to the witnesses for your testimony today. It is great to see you, and I appreciate your highlighting the important role that energy costs, and in particular energy efficiency, play in reducing the bottom line cost that small businesses face.

In your testimony, several of you said that for most small businesses, energy usage is their single largest business expense. The problem is that many small businesses do not have the expertise in-house to really analyze, understand, and reduce their energy usage, nor do they have the resources or capability to hire an outside energy resource expert. And, these would be the types of challenges I think we could address through the passage of the bipartisan Shaheen-Portman bill and through other legislative means.

As some of you may know, in Delaware, we have a terrific resource that helps small- and medium-sized manufacturers reduce their energy costs. It is one of the sites of the DOE-sponsored Industrial Assessment Centers. It is run by the University of Delaware and is a terrific resource. I have had the pleasure of touring some of the Delaware-based manufacturers that they have helped and that have received one of the more than 100 energy efficiency assessments that the IAC has conducted since 2006. These make a big difference in a manufacturing company's bottom line, reducing greenhouse gas emissions, as well, and helping to train the next generation of engineers and scientists in the field.

Just one quick example. Hirsh Industries, which manufactures storage products—I think that is also called filing cabinets—for the office and home, they do a great job at it, but they saved \$217,000 a year in energy costs through the IAC review.

I would also just like to briefly mention, as Co-Chair of the Manufacturing Jobs for America Initiative, I am pleased to see support among a number of Senators who have introduced bills related to energy efficiency and green tech and the future of our manufacturing sector. I, in particular, would like to call out Senator Shaheen's leadership on the bipartisan Smart Manufacturing Leadership Act, and to highlight Senator Hirono's Clean Technology

Manufacturing and Export Assistance Act, and Senator Merkley's Job Creation Through Energy Efficient Manufacturing Act. I think it is great a number of Senators have recognized the value of being proactive in energy efficiency.

To Kateri Callahan, if I might, great to see you again. Just tell me for a minute, if you would, about energy efficiency programs at the federal level that also connect with state and local resources like the Industrial Assessment Centers or the Weatherization Assistance Program. How can we make sure that more small and medium businesses are aware of these resources, and what sort of long-term and compounding benefit do you see them get from an investment in energy efficiency of this type.

Ms. CALLAHAN. Great. Thank you very much for the question. I want to back up a little bit to the talk that so many have engaged in on the volatility—potential volatility of price of natural gas. One thing that has not been mentioned, and you can take out the Alliance to Save Energy, maybe I should note, is fuel neutral. We do not talk about it. We just want whatever you use, to use it smarter.

One of the ways that small businesses, in particular, I think, can insulate themselves from the volatility in the marketplace is to become as efficient as possible. Consumers and businesses do not care about the per kilowatt hour cost of electricity. They care about what their bill is every month. So, if they can make investments, lower those bills, become more productive and more competitive, that is what is important.

And, I think that the federal programs are connecting in a lot of ways. The Department of Energy funds the State Energy Offices, which do a lot of this work through either the Energy or the Economic Development Offices. As I said earlier, Senator, when you were not in the room, we really need the federal government to work at the state and local level and with partners and trade allies and organizations that are working on the ground, because that is the best way to connect with the small businesses, to meet them where they live, to talk in the terms that they understand about building and growing their businesses and generating jobs and adding to the bottom line.

So, the Industrial Assessment Centers are great. You mentioned Pennsylvania. My written example has an example in Tennessee, working through the University of Tennessee in Murfreesboro and a company that was able to compete better than all of its competitors during the downturn in the recession because of the energy audits that were done there and the improvements made. Those are all across the landscape.

The Department of Agriculture, through its Renewable Energy Assistance—or its Rural Energy Assistance Program and loan, they are helping out, too.

I think one thing that really needs to happen at the federal level is a convergence and a one-stop shop, if you will, of all the different resources that are available. Folks try to do that. The SBA has some of that, but more needs to be done and we need a central location for small businesses to come and get the help that they need.

Senator COONS. Well, thank you, Kateri, and I will just mention, Senator Shaheen has just introduced a bill, the Small Business En-

ergy Efficiency Act, that would expand the eligible functions for the SBA 504 loans to include energy efficiency work studies, retrofits. I have joined as a cosponsor. I think it is a great way to expand some of the reach of the SBA into this field.

I have a bipartisan bill with Senator Moran, the Master Limited Partnerships Parity Act, that would make accessible an existing financing vehicle that is mostly used for pipelines in oil and gas, but it would make it accessible for energy efficiency investments, as well. I think we have got a lot of work to do together to make sure that energy efficiency is part of the menu of trying to reduce the total energy costs of American manufacturing.

Thank you all for your appearance today and for your testimony. Thank you, Mr. Chairman.

Chairman VITTER. Thank you very much.

Thank you all very much, and certainly this discussion will inform in a very important way my work and others' work regarding energy legislation affecting small businesses.

I know Senator Markey has additional questions. I am going to invite everybody to submit those for the record, because, unfortunately, I cannot stay, and at least one of our witnesses cannot stay. But, certainly, everyone is invited to expand on questions, and, of course, we will get appropriate answers for the record.

Senator MARKEY. Mr. Chairman, could I just be recognized for 30 seconds?

Chairman VITTER. Sure, 30 seconds.

Senator MARKEY. Thank you, Mr. Chairman.

I could envision a situation where the negotiation between Iran and the United States and the other countries in the world go sour, it is rejected in Congress, and one of the options is to bomb Iran and its nuclear programs, and I could then envision the price of oil going to \$5 a gallon, \$6 a gallon, and I could see American oil here and natural gas here protecting us against that, that we were not exporting.

And, as well, in terms of the economic studies, yes, there are some studies that say that there are winners and losers, but the winners are the oil and gas companies and the losers are the manufacturers, the utilities and consumers and the natural gas vehicle industry. So, maybe you can say that, whoa, well, look at the tremendous job creation over here for oil and gas, but look at all the losers that are left in their wake because the price of natural gas has gone up so much.

So, I just wanted to kind of throw that in, and I will submit my questions, Mr. Chairman. Thank you for the opportunity.

Chairman VITTER. Okay. Well, I am sure this debate will continue, I have no doubt, so I will look forward to it.

Thank you all very, very much, and the hearing is adjourned.

[Whereupon, at 3:48 p.m., the committee was adjourned.]

## **APPENDIX MATERIAL SUBMITTED**



AMERICAN  
SUSTAINABLE  
BUSINESS  
COUNCIL

July 13, 2015

Senator David Vitter, Chairman  
Committee on Small Business &  
Entrepreneurship  
United States Senate  
428A Russell Senate Office Building  
Washington, D.C. 20510

Senator Jeanne Shaheen,  
Ranking Member  
Committee on Small Business &  
Entrepreneurship  
United States Senate  
428A Russell Senate Office Building  
Washington, D.C. 20510

Dear Chairman Vitter and Ranking Member Shaheen,

The American Sustainable Business Council (ASBC) opposes large scale exporting of liquefied natural gas (LNG). We also oppose the construction of additional port facilities designed to service LNG exports.

ASBC is the leading business advocacy group working to implement public policies that build a sustainable economy. Through our national member network we represent more than 200,000 businesses and more than 325,000 entrepreneurs, executives, managers and investors. The businesses we represent, and many more like them, recognize the importance of a safe and sustainable energy policy for the United States. This means an energy policy that (1) keeps prices low today, and (2) shifts us toward fuels that do not burden the economy with externalities that necessitate higher taxes.

The U.S. is blessed with abundant domestic energy supplies and low energy prices. Low prices benefit small businesses in both direct and indirect ways. The direct ways are obvious: with cheaper energy, it costs less to heat offices and power factories. But the indirect benefits are just as important: When employees have lower home heating and electrical costs, businesses face less pressure to raise pay. When consumers enjoy lower home energy costs

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they have more discretionary spending power. Lower energy costs also lead to lower transportation costs, which helps small businesses to expand. The price advantage that American business enjoys as a result of abundant LNG is something we should exploit domestically rather than give away.

As an organization representing a business point of view, we respect the argument that trade generally boosts the economy of both exporter and importer. But that argument deals only with aggregate economic activity (GDP) and does not take into account many factors that matter in the real world. A recently published report<sup>1</sup> shows that the economic benefits of LNG exports are highly concentrated. With greater exports, LNG producers and shippers win, but the rest of the economy suffers declining revenue, loss of jobs, and erosion of competitive advantage. We do not believe the Federal Government should use its power to favor the natural gas industry at the expense of the broad range of small businesses and entrepreneurs who create jobs and prosperity across all industries and all parts of the United States.

To the extent that the Federal Government engages in shaping the future of energy markets, we encourage steps that hasten the transition to renewable fuels. Our advocacy on this point is based primarily on economic considerations, particularly on factors that influence the business climate in the long term.

No business lasts long unless it understands its costs correctly. We consider energy costs to consist of three important components: (1) the direct cost we pay via the utility bill each month; (2) the externalized cost we pay for military presence to secure access to Middle-East energy sources; and (3) the externalized cost we are starting to pay as a result of climate change. Those costs include hardening our shorelines, rebuilding storm-damaged infrastructure, and realigning food production to cope with changing temperatures and rainfall. The first cost is easy to discuss and measure; the second and third costs are harder to measure but no less real as they hit businesses in the form of higher taxes and in many cases, reduced demand.

For all these reasons we oppose the expansion of LNG exports. Let American business continue to benefit from low energy prices. Meanwhile let us withdraw implicit and explicit subsidies that prop up the economics of fossil fuels to the detriment of entrepreneurship in clean energy. We believe this will lead in the long run to a better climate for small business generally, as well as a more vigorous and innovative energy sector.

Ultimately it will reduce the need for taxes and public spending to compensate for the negative externalities of our present energy economy.

Thank you for your consideration.

Sincerely,



David Brodwin  
Co-founder and Vice President,  
American Sustainable Business Council

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1. [http://www.synapse-energy.com/sites/default/files/SynapseReport.2013-01.SC\\_LNG-Exports-Benefits.13-009.pdf](http://www.synapse-energy.com/sites/default/files/SynapseReport.2013-01.SC_LNG-Exports-Benefits.13-009.pdf)

Senate Committee on Small Business HearingJuly 14, 2015Responses from Neil Aspinwall to the Follow-Up Questions from Senator Mike Enzi**1. How can short-term job training programs for oil and gas workers prepare students for the workforce?**

SOWELA Technical Community College has implemented several short-term non-credit workforce development programs focusing on the oil and gas industry. These programs include the following: Machinist, Millwright, Pipefitting, Structural Welding, and Pipe Welding. These programs consist of industry requested competencies taken from the traditional longer credit programs. These programs allow students to obtain the skills and knowledge they need in a more focused shorter-term instructional program thereby allowing them to be placed on the job quicker. These programs also are scheduled during evening hours which allow working students to take advantage of the training without having to give up their regular jobs. However, as stated in the hearing, these short-term workforce programs for the oil and gas workers are not eligible for any type of federal financial aid which produces an obstacle for many students because they cannot afford the cost. According to the Louisiana Workforce Commission, 63 percent of the high-wage, high-skill, and high-demand jobs in Louisiana require more than a high school diploma but less than a four degree. Therefore, these short job training programs provide a means for individuals who may unemployed or under employed to acquire the skills and knowledge they need to quickly enter the oil and gas related workforce and take advantage of middle class employment opportunities.

**2. Has industry contributed to the development of these programs to ensure they are structured towards real-world skills needed on the job?**

At SOWELA Technical Community College, we strive to involve business and industry in the planning and execution of all our instructional programs so as to ensure that the skills and competencies we are teaching reflect the same skills and competences needed on the job. The short-term programs that we have created for the oil and gas workers have had intensive input from our local business and industry partners. For example, in our structural welding program, CB&I (Chicago Bridge & Iron) provides welding instructors and welding inspectors to help ensure that our students are exposed to the types of welding skills expected when hired as structural welders by their company. Additionally, the curriculum for our machinist program was developed through the input of a Machinist Advisory Committee which is made up of local machinists in the region. These individuals also chose the equipment that would be purchased and used in the program. Finally, SOWELA's HVAC program was created through the input of an HVAC industry advisory committee who helped create the curriculum, donated necessary equipment, and chose the first instructor. This process has been very beneficial because if the local industries have direct input into the operation of these short-term programs, then they are confident the students completing the programs have the requisite skills necessary for success on the job and therefore are willing to hire the students upon completion.

**Senate Committee on Small Business  
Follow up Questions from July 14 Hearing  
“Challenges and Opportunities for Small Businesses Engaged in  
Energy Development and Energy Intensive Manufacturing”**

**Response to Questions for the Record by Senator Mike Enzi,  
Submitted by Toby Mack, President & CEO, Energy Equipment and Infrastructure Alliance  
August 12, 2015**

**QUESTION 1: LNG Exports**

As you know, Congress continues to examine our energy export policy with the goal of expanding opportunities for economic growth and access to overseas markets. Permitting for liquid natural gas (LNG) export facilities have been delayed and we need to ensure bureaucratic red-tape is not prohibiting development. My state of Wyoming has worked to access Asia Pacific markets through the Jordan Cove Energy Project on the Oregon coast, but many of these projects would benefit from a streamline review process with deadlines for application. As the Senate moves forward on energy legislation this Congress, I expect us to consider Wyoming Senator John Barrasso's LNG Permitting Certainty and Transparency Act, to accelerate consideration of LNG export applications. How would legislation like this affect pending export projects in your industry? What are the other major barriers to accessing overseas markets?

**Answer:**

The major barrier for U.S. natural gas entering the global market is a slow and unpredictable domestic regulatory process. The Federal Energy Regulatory Commission (FERC), pursuant to Section 3 of the Natural Gas Act as amended under EPACT 2005, has exclusive jurisdiction for authorizing the siting and construction of onshore and near-shore LNG import or export facilities. The FERC process is extensive, predictable, requires a significant amount of resources and investment on the part of an applicant and provides meaningful opportunity for public comment and input. For applications for the export of natural gas to non-Free Trade Agreement (FTA) countries, the Natural Gas Act directs the Department of Energy (DOE) to grant export authorization unless the DOE finds that the proposed exports “will not be consistent with the public interest.” The DOE process for issuing a public interest determination has not been as predictable. Senator Barrasso's LNG Permitting Certainty and Transparency Act, by requiring the Secretary of Energy to issue its public interest determination within 45 days after the conclusion of the NEPA review by the FERC, provides this clarity and timeliness. Applicants will be better able to estimate their costs, construction timelines, and labor needs. And, these multi-billion dollar investments will be more likely to progress toward construction and operation. Senator Barrasso's legislation also provides for expedited judicial review in the U.S. Circuit Court of Appeals where the terminal in question is located, providing additional predictability. DOE has made an effort to improve the LNG export permitting procedures by instituting changes in August 2014. This legislation takes the next step by providing needed certainty to remaining applicants. The LNG Permitting Certainty and Transparency Act will expedite the process by clarifying the period of time between successful completion of the FERC review and receipt of final DOE approval.

**QUESTION 2: Workforce Training**

In your testimony, you outlined the fact that equipment products and services provided by the supply chain in support of shale energy operations are produced by businesses and workers in all 50 states. Can

you provide more detailed information on equipment costs alone? Furthermore, can you provide any examples of supply change implications?

**Answer:**

According to IHS Economics, in a report issued September 2014 entitled “Supplying the Unconventional Revolution: Sizing the unconventional oil and gas supply chain”, the manufacturing sectors that produce equipment used in shale oil and gas production and transportation, produced equipment valued at \$58 billion in 2015. The following table shows the value of equipment produced in the United States for shale oil and gas operations in each product category in 2015 (in 2012 dollars).

<b>Manufacturing Sector</b>	<b>\$Million</b>
Steel Product Manufacturing from Purchased Steel	\$10,739
Agriculture, Construction, and Mining Machinery Manufacturing	\$10,402
Air and Gas Compressor Manufacturing	\$6,819
Iron and Steel Mills and Ferroalloy Manufacturing	\$6,290
Cutting Tool and Machine Tool Accessory Manufacturing	\$5,977
Pump and Pumping Equipment Manufacturing	\$3,753
Fabricated Pipe and Pipefitting Manufacturing	\$2,986
Power Boiler and Heat Exchanger Manufacturing	\$2,678
Metal Tank (Heavy Gauge) Manufacturing	\$1,924
Railroad Rolling Stock Manufacturing	\$1,541
Heavy Duty Truck Manufacturing	\$1,425
Other Engine Equipment Manufacturing	\$953
Instruments and Related Products Manufacturing for Measuring, Displaying, and Controlling Industrial Process Variables	\$691
Other Electronic Component Manufacturing	\$668
Conveyor and Conveying Equipment Manufacturing	\$481
Aluminum Sheet, Plate, and Foil Manufacturing	\$363
Other Measuring and Controlling Device Manufacturing	\$198
Turbine and Turbine Generator Set Units Manufacturing	\$117
Speed Changer, Industrial High Speed Drive, and Gear Manufacturing	\$81
Automatic Environmental Control Manufacturing for Residential, Commercial, and Appliance Use	\$44
Mechanical Power Transmission Equipment Manufacturing	\$44
Totalizing Fluid Meter and Counting Device Manufacturing	\$38
Analytical Laboratory Instrument Manufacturing	\$23
Power Driven Hand tool Manufacturing	\$16
Lawn and Garden Tractor and Home Lawn and Garden Equipment Manufacturing	\$9
Light Truck and Utility Vehicle Manufacturing	\$1
<b>Total Production</b>	<b>\$58,260</b>

According to the same study, in the unconventional oil and gas supply chain industries, in 2015 over 615,000 workers are employed in jobs directly associated with products and services provided for unconventional oil and gas production and transportation. The numbers of these workers in each industry are shown in the table below. These are only the jobs in those firms that exist due to shale oil and gas.

Industry	Workers
Construction of Upstream Facilities and Structures	74,333
Support Activities for Oil and Gas Operations	72,315
Architectural, Engineering, and Related Services	58,480
Construction of Midstream and Downstream Facilities and Structures	49,220
General Freight Trucking	28,521
Water, Sewage and Other Systems	26,731
Construction Sand and Gravel Mining	24,313
Cutting Tool and Machine Tool Accessory Manufacturing	22,665
Agriculture, Construction, and Mining Machinery Manufacturing	21,832
Steel Product Manufacturing from Purchased Steel	21,039
Wholesale Machinery and Equipment	18,969
Drilling Oil and Gas Wells	18,216
Retail Building Material and Garden Supply	15,074
Water Transportation	13,150
Power Boiler and Heat Exchanger Manufacturing	11,115
Fabricated Pipe and Pipefitting Manufacturing	10,605
Wholesale Hardware, Plumbing, Heat. Eq.	10,191
Wholesale Metal and Mineral	9,646
Insurance Carriers	8,535
Air and Gas Compressor Manufacturing	8,311
Metal Tank (Heavy Gauge) Manufacturing	6,790
Wholesale Lumber and Construction Mat.	6,036
Other Professional, Scientific, and Technical Services	5,695
Pump and Pumping Equipment Manufacturing	5,694
Construction, Mining and Forestry Machinery and Equipment Rental and Leasing	5,363
Warehousing and Storage	5,174
Motor Vehicle and Motor Vehicle Parts	5,149
Other Basic Inorganic Chemical Manufacturing	4,562
Commercial and Industrial Machinery and Equipment (except Automotive and Electronic) Repair and Maintenance	4,390
Iron and Steel Mills and Ferroalloy Manufacturing	4,228
Wholesale Electrical Goods	4,005
Industrial Gas Manufacturing	3,829
Wholesale Chemical and Allied Products	3,716
Rail Transportation	3,674
Heavy Duty Truck Manufacturing	3,636
All other industries	20,707
Total Employment	615,910

EEIA estimates that in excess of 90% of these jobs are with small businesses. As noted earlier, this jobs analysis was undertaken in 2014 prior to the sharp downturn in energy markets. The current economic environment of artificially depressed market prices (due to export constraints) for unconventional (shale-produced) crude oil and natural gas is putting many of these supply chain companies and jobs at risk, and we know that some of them have already been lost.

Lifting the ban on crude oil exports, and adopting legislation mandating expeditious processing of applications for LNG exports to non-free trade agreement countries, will help significantly to turn these markets around and save and even increase these supply chain jobs, as noted in my July 14 testimony.